

# SCIENTIFIC AGRICULTURE

Vol. XIII.

AUGUST, 1933

No. 12

## THE INFLUENCE OF RADIANT ENERGY ON HEMATOPOIETIC PROCESSES IN THE PIG<sup>1</sup>

R. D. SINCLAIR<sup>2</sup>

*University of Alberta, Edmonton, Alberta*

[Received for publication March 21, 1933]

In a previous paper (1) the influence of the radiant energy factor in the nutrition of the pig, with special reference to the prevention of a condition of "stiffness", rachitic in nature, was discussed. Results of a series of experiments dealing with the treatment of growing pigs with the various forms of radiant energy under conditions of high and low calcium intake were submitted. It was suggested that exposure to solar or artificial irradiation as well as cod liver oil feeding promoted growth and prevented or ameliorated a condition clinically suggestive of rickets.

In connection with a study of the blood of the pigs in certain of the experiments it was considered worth while to extend the laboratory determinations to include red and white cell counts, packed cell volume and hemoglobin percentage with a view to detecting any anaemic tendencies which might develop. This procedure was suggested in view of the opinion that growing pigs closely confined during the winter months may develop a secondary anaemia, and on account of the lack of agreement on the point as to whether or not natural or artificial irradiation exert any influence on hemoglobin formation or the blood picture in general.

The evidence with regard to the hematopoietic influence of radiant energy is conflicting. Laurens (2) in connection with his review of the subject of the physiological effects of irradiation, conveys the impression that the matter is unsettled, although there is a strong indication that depriving certain animals of sunlight does not give rise to anaemia. Mayerson and Laurens (3) found that repeated exposures to carbon arc radiation stimulated the hematopoietic system in dogs as shown by an increase in the red cell number from 10 to 19%, maintained for from 3 to 6 weeks after irradiation. Hess and Unger (4) found that exposure of children to the mercury vapor lamp increased the hemoglobin content of the blood as well as the red cell count.

In connection with a study of anaemia in young pigs, Hart, Elvehjem and Steenbock (5) did not find that exposure of pigs on a cow's milk diet to ultra-violet light and sunlight, stimulated hemoglobin synthesis. On the other hand Mathews, Doyle and Whiting (6) secured beneficial effects from exposing pigs to sunlight. The hemoglobin percentage and red cell count was increased as compared with pigs confined inside. Irradiation by means

<sup>1</sup> Experiment conducted under 1930 T. Eaton Overseas Scholarship.

<sup>2</sup> Associate Professor of Animal Husbandry.

of a quartz mercury-vapor lamp did not result in improvement. Mayerson and Laurens (7) in a recent report on the effects of radiant energy on experimental hemolytic anaemia in dogs, state that regeneration of red cells and hemoglobin was undoubtedly faster when the animals were irradiated with either the mercury vapor or carbon arc lamp. Similarly, Foster (8) secured beneficial effects from radiant energy in connection with milk anaemia in rats.

#### EXPERIMENT

In the paper (1) already alluded to, details regarding an experiment conducted by the writer at the Rowett Institute of Animal Nutrition, Aberdeen, Scotland, during the winter of 1930-31 were given. Space will not be taken to cover the plan of the experiment at this time. It will be sufficient to draw attention to the various lots which were included in the trial. From the point of view of ration and experimental treatment they were arranged as follows:

- Lot I : Basal ration—salt—no minerals.
- Lot II : Basal ration—salt—no minerals—exposure to sunlight.
- Lot III : Basal ration—salt—no minerals—exposure to quartz mercury vapor lamp.
- Lot IV : Basal ration—salt—no minerals—1% cod liver oil.
- Lot V : Basal ration—salt—ground limestone.
- Lot VI : Basal ration—salt—ground limestone—exposure to sunlight.
- Lot VII : Basal ration—salt—ground limestone—exposure to quartz mercury vapor lamp.
- Lot VIII: Basal ration—salt—ground limestone—1% cod liver oil.

Blood samples were secured from the various pigs in the experiment at monthly intervals and data obtained for the months of December, January, February, March and April. In this way the trend of the blood picture was followed during the winter period.

The Burkner Haemocytometer was used in making red and white cell counts. The Talquist Original Hemoglobin Scale was used in determining the percentage of hemoglobin. Red and white cell volume was determined by centrifuging the oxalated blood in graduated agglutination tubes, at a speed of 3,000 revolutions per minute for one hour, and reading off the percentage of packed cells from the graduations on the tube.

#### RESULTS

The normal count of red and white cells in pig blood appears to show quite a wide variability and for that reason reference will be made to the findings of certain workers. Giltner (9) found an average of 8,450,000 red cells per cu. mm. of blood, with pigs averaging 4 months of age. The average white cell count on the same pigs was 19,000 per cu. mm. of blood. He quotes such earlier workers as Bethe, Stoltzing and Wendelstadt and Bleibtren, who give figures for the normal of erythrocytes at 6,960,000 and 5,440,000 and 8,686,200 respectively. Palmer (10) found an average of 6,215,160 red cells and 18,320 white cells per cu. mm. in the blood of older pigs. Lewis (11) and



others in connection with cholera studies found the blood of normal, susceptible pigs to contain on an average 8,276,000 red cells and 24,500 white cells per cu. mm. Dinwiddie (12) reported on the blood of 16 normal pigs and gave 6,334,000 red cells and 11,800 leucocytes as the result of his findings. Forbes (13) and others found an average of 8,506,000 red cells and 23,113 leucocytes per cu. mm. in the blood of 30 apparently normal pigs. Gutig (14) secured red cell counts varying from 5,400,000 to 7,080,000 and white cell counts averaging 19,500 with 13 pigs. No references were found with regard to the percentage volume of red and white cells in pigs' blood.

Prior to the commencement of the experiment under consideration the blood of 100 apparently normal pigs, averaging approximately 50 pounds in weight was sampled. The red and white cell count and percentage volume of red and white cells was found to be as follows:

	<i>Mean value</i>
Red cells per cu. mm.	7,473,000
White cells per cu. mm.	27,236
Percentage volume red and white cells	38.10

The following table shows the result of the red cell count in the various groups during the monthly intervals of the experiment.

TABLE 1.—Red cells per cu. m. of blood—average for group (000 omitted).

Lot	Dec.	Jan.	Feb.	Mar.	April
I : Basal	7,446	7,234	6,098	6,399	7,387
II : Basal + sunlight	7,836	6,984	6,728	7,780	6,352
III : Basal + q.m.v. lamp	8,238	6,999	5,601	5,729	5,363
IV : Basal + 1% cod liver oil	7,549	6,824	6,493	6,283	6,874
V : Basal + gr. limestone	8,307	6,359	6,433	6,923	7,389
VI : Basal + limestone + sunlight	7,919	6,337	6,597	6,653	6,918
VII : Basal + limestone + q.m.v. lamp	7,686	6,682	6,267	6,762	6,788
VIII : Basal + limestone + 1% c. l. oil	7,915	6,840	5,985	6,466	7,334

Mainly with a view to throwing some light on the question as to whether or not packed cell volume may be relied upon as a useful routine procedure in determining conditions of anaemia, rather than the more detailed and laborious practice of blood counting, the percentage volume of red and white cells was determined on the blood of individual pigs. The results of this determination are shown in Table 2.

TABLE 2.—Percentage volume red and white cells—average for groups.

Lot	Dec.	Jan.	Feb.	Mar.	April
I : Basal	38.1	31.7	30.1	31.1	37.7
II : Basal + sunlight	38.7	33.9	32.0	36.6	33.3
III : Basal + q.m.v. lamp	38.2	35.3	27.9	32.9	33.0
IV : Basal + cod liver oil	36.3	32.2	30.2	36.4	37.4
V : Basal + gr. limestone	39.7	31.8	31.8	34.5	37.7
VI : Basal + gr. limestone + sunlight	38.9	29.4	30.8	33.0	40.1
VII : Basal + gr. limestone + q.m.v. lamp	38.3	31.4	29.7	33.0	38.3
VIII : Basal + gr. limestone + c. l. oil	38.8	32.6	29.3	31.2	38.3

The percentage of hemoglobin was estimated in the blood of all pigs by means of the Talquist Hemoglobin Scale with the following results.

TABLE 3.—Percentage hemoglobin (70-80 normal for pig)—average for group.

Lot	Dec.	Jan.	Feb.	Mar.	April
I : Basal	72	63	67	68	70
II : Basal + sunlight	72	67	67	70	71
III : Basal + q.m.v. lamp	72	64	66	67	69
IV : Basal + cod liver oil	72	70	70	70	70
V : Basal + gr. limestone	72	63	67	73	72
VI : Basal + gr. limestone + sunlight	72	62	70	73	78
VII : Basal + gr. limestone + q.m.v. lamp	72	62	67	73	77
VIII : Basal + gr. limestone + c. l. oil	72	65	67	67	73

In this experiment cases of a secondary anaemia, accompanied by clinical and pathological symptoms described by McGowan (15) developed in several

groups. Since these cases occurred early in the trial and before experimental factors had time to exert an influence, it cannot be suggested that exposure to, or lack of radiant energy entered into the consideration. Cases of this kind were removed from the experimental groups either for observation or special treatment with liver extract. The influence of the administration of liver extract on this type of anaemia was reported by McGowan and the writer (16) elsewhere. Only pigs which failed to show any acute anaemic syndrome were included in the final calculation with respect to the blood picture. The animals which were included in the final interpretations were those that could be regarded as typifying the course of development in any group.

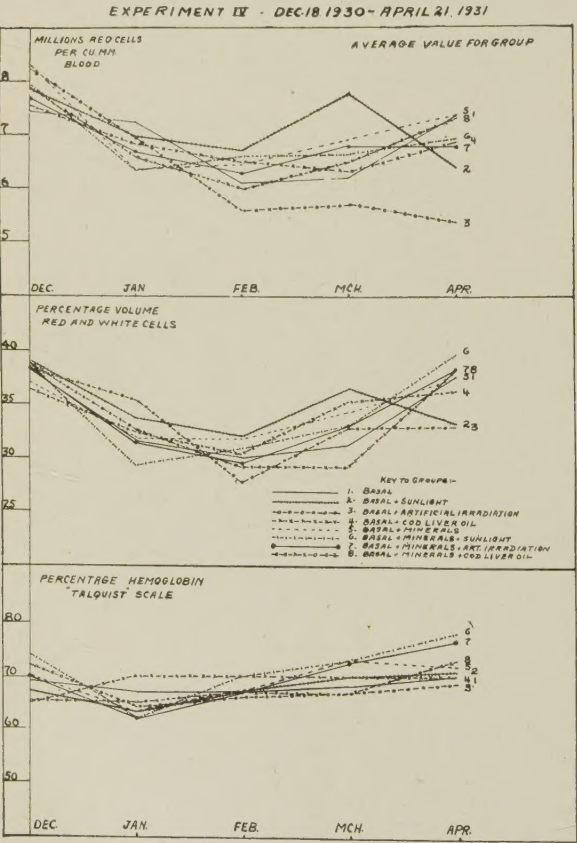


Figure 1. Red cell count, cell volume and percentage hemoglobin of pigs' blood during months of Dec.-Apr., inclusive.

Reference to Table 1 and to Figure 1 indicates that in this experiment there was a marked falling off in the red cell count in all groups during the month of January, with a low point in February and a process of recovery back to almost normal in most groups during March and April. The general



trend seems to be indicative of a seasonal variation in the blood picture of all groups, rather than group variation due to experimental factors. Lots II and III depart rather markedly from the general trend, in that Lot II (basal-sunlight) shows a decided slump in red cells in April following a high point in March, while Lot III shows a more or less downward tendency during the entire progress of the experiment. Lot I (basal) shows a higher red cell count than Lots II and III and a higher percentage of hemoglobin than Lot III, an occurrence which suggests that neither sunlight nor artificial irradiation played any part in improving the blood picture of the pigs on the basal ration in this experiment.

Considering the pigs fed the basal ration with minerals in addition, it will be observed that Lots VI and VII show the highest percentage of hemoglobin as well as cell volume. Reference to the previous paper (1) will recall that these pigs made the most satisfactory growth during the progress of the trial and exhibited the greatest degree of "thriftness". Reference to the chart will show that in general the groups of pigs fed ground limestone and having free choice of other minerals in addition to the basal diet concluded the experiment with a more satisfactory blood picture than those fed the basal ration alone. This is indicated in Tables 2 and 3, which show the percentage hemoglobin and cell volume in each group.

It would appear that the higher calcium level of the blood in the mineral fed groups (1) accompanied as it was by more rapid growth and evidences of more active physiology, was associated with more active hematopoietic functions.

The groups of pigs on the higher calcium intake made a more active recovery from the "sub-normal" blood condition existing in February than did the groups confined to the basal ration. In this connection it may be stated that the majority of the pigs which were removed from the experiment when exhibiting symptoms of the aplastic anaemia were taken out of the "no mineral lots".

From a study of the blood data and reference to the chart, it would seem that the packed cell volume is quite definitely related to the red cell count. The similarity of the trend suggests that for purposes of detecting anaemic cases in experiments of this type, cell volume determinations constitute a convenient and reliable procedure. The decline in cell volume as related to erythrocyte count is indicated in the following table which shows the results of determinations on the blood of pigs which developed the "iron deficiency" sequelae.

<i>Red cells per cu. mm.</i>	<i>Cell volume (%)</i>
5,681,000	32.2
5,671,000	30.2
5,070,000	28.8
4,349,000	18.3
4,228,000	17.2
3,156,000	15.9
2,605,000	16.4

Leucocyte counts were made on the blood of all pigs in the experiment. It was thought that this practice would assist in the detection and diagnosis of cases of abnormality which might arise in the experimental lots from time to time. The preliminary count prior to the start of the experiment indicated

such a wide variation between individuals under the same conditions of feed and environment that no definite significance could be attached to group differences. These wide differences have been indicated by the work of others (9), (12) and (13).

TABLE 4.—*Leucocytes per cu. mm.—group averages.*

Lot	Dec.	Jan.	Feb.	Mar.	April
I : Basal	22,145	29,963	19,568	24,103	22,022
II : Basal + sunlight	25,395	20,527	27,382	23,160	25,252
III : Basal + q. m. v lamp	28,237	25,903	26,935	24,493	24,692
IV : Basal + cod liver oil	32,032	24,784	25,992	28,243	20,244
V : Basal + gr. limestone	32,436	34,115	25,225	29,536	29,073
VI : Basal + gr. limestone + sunlight	25,237	30,047	22,129	20,827	20,794
VII : Basal + gr. limestone + q.m.v. lamp	25,623	28,588	22,341	22,348	22,836
VIII : Basal + gr. limestone + cod liver oil	26,761	26,464	32,578	23,549	22,827

It would appear that the leucocyte content of the blood does not bear any relation to the experimental factors under consideration.

The pigs suffering from the condition of "stiffness" which developed in this experiment did not appear to show a leucocytosis as compared with other lots. In general the leucocyte count diminished as the experiment advanced and the pigs increased in age.

#### SUMMARY

Radiant energy did not appear to exert any influence on red cell or hemoglobin formation in this experiment. While a decrease in red cell count, cell volume and hemoglobin percentage occurred, the trend was seasonal rather than the result of experimental factors. A low point in the blood picture was reached in February with recovery during March and April. Pigs being fed supplemental minerals showed a more favorable blood condition at the conclusion of the experiment than those on the basal diet, a condition which was in keeping with their more rapid growth and better "thrill". Leucocyte counts failed to yield any information of special interest.

#### CONCLUSIONS

1. Radiant energy did not appear to play any part in hematopoietic processes in the experiment reviewed.
2. Erythrocyte counts and packed cell volume agreed very closely in the portraying of the blood picture.
3. Leucocyte counts failed to reveal any information of special value.

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# FEEDING CANE MOLASSES TO GROWING CHICKS AND LAYING HENS<sup>1</sup>

A. J. G. MAW<sup>2</sup>

*Macdonald College, P. Q.*

[Received for publication May 15, 1933]

Although cane molasses has been used very extensively in the rations of other farm animals it has not been fed to poultry to any great extent because little is known concerning its value as a poultry food. Some observations have been made concerning the use of molasses in fattening rations. Lippincott (1) reported that by the addition of sufficient molasses to a basal ration of oat flour to form 10% of the solid portion of a milk fattening ration, the average gains in weight were slightly increased on a lower feed consumption. In general, it is believed that molasses adds to the palatability and increases consumption. The question arises as to whether the increased food consumption brought about by the addition of molasses to the ration results in a corresponding increase in growth and egg production. Winter (2) found that molasses improved milkless rations for growing chicks. The same investigator observed that molasses, when fed to laying hens, appeared to have little or no influence on feed consumption, body weight, or production, but did have a tendency to lower mortality and contribute toward better health and condition of the birds.

The experiments here reported deal with the feeding of molasses to growing chicks and laying hens. The object of the study was to determine the effect of the addition of molasses to the ration on growth and egg production in relation to the amount of feed consumed.

## EXPERIMENTS WITH GROWING CHICKS

The basal ration used in this work was the ordinary mash used at this department for chicks reared in batteries. This ration consisted of the following:

<i>Parts by weight</i>		<i>Parts by weight</i>	
Ground yellow corn	50	Meat meal	3
Wheat bran	10	Bone meal	3
Middlings	10	Cod liver meal	2½
Pinhead oats	10	Calcium carbonate	2
Alfalfa leaf meal	5	Grit (granite)	2
Dried buttermilk	5	Cod liver oil	1
Fish meal	5	Salt	1

Four other rations were made up containing the basal ration to which was added sufficient molasses to form 1, 3, 5 and 7% of the total ration. Five groups of Single Comb White Leghorn chicks were fed these rations for a period of 10 weeks. The lots were kept in adjoining batteries and reared under as uniform conditions as possible. Individual weight and feed consumption records were taken weekly. Table 1 gives a summary of the data secured in this experiment.

<sup>1</sup> Contribution from the Faculty of Agriculture of McGill University, Macdonald College, P.Q., Canada.

<sup>2</sup> Journal Series No. 25.

TABLE 1.—*Feed consumption and growth of chicks fed on rations containing molasses.*

Lot	Ration	No. of chicks	Mortality	Average feed per bird (grams)	Average weight at 10 weeks	
					Males (grams)	Females (grams)
1	Battery mash	68	3	2301.18	786.32	658.87
2	No. 1 with 1% molasses	68	5	2350.00	785.82	658.81
3	No. 1 with 3% molasses	68	21	2425.39	727.22	654.17
4	No. 1 with 5% molasses	68	14	2642.34	794.26	634.48
5	No. 1 with 7% molasses	68	13	2712.62	794.66	679.88

It would appear from Table 1 that the addition of molasses increases the amount of feed consumed per bird. This is particularly true of the lots receiving the rations containing 5 and 7% molasses. The feed consumption per bird was roughly 400 grams more in lot 5 than in lot 1. The rate of growth for the different groups was quite uniform. The average weights attained by the males and females at 10 weeks of age show no significant differences. The lots receiving the higher percentages of molasses had a higher mortality. The majority of the deaths in these lots occurred during the first week. It is possible that these rations contained too much sugar for the well-being of young chicks. The presence of molasses in the ration did not appear to make the feed laxative and aside from the higher mortality in lots 3, 4 and 5 the general health of the chicks was good.

#### EXPERIMENTS WITH LAYING HENS

The all-mash rations given in Table 2 were fed to 5 lots of Single Comb White Leghorn pullets for a period of 20 weeks from October to March. In these rations cane molasses was used to replace part of the corn or the powdered buttermilk, or both. In placing the birds in the pens no selection was made other than attempting to keep the average weight per pen as uniform as possible. The birds were weighed individually every fourth week. The feed consumption was checked each week and the amount of water consumed per lot for 1 week in every 4 was determined. The data secured are given in Table 3.

The birds which were fed molasses laid fewer eggs than those which received rations containing no molasses. There is over a 10% difference in production between the average for lots 1 and 2, and the average for lots 3, 4 and 5. The average feed consumption per bird per day for the various lots was quite uniform. No one ration produced any greater gains in body weight than any other. The lots which received molasses consumed on the average slightly more water. The addition of molasses in the amounts given did not make the rations laxative. The deaths which occurred in the pens were all due to causes which were, as far as could be determined, unrelated to the characters of the feeds used.

#### SUMMARY

1. The addition of molasses to the mash fed to chicks in batteries caused an increase in feed consumption without a corresponding increase in body weight.



2. A lower egg production was secured from hens whose rations contained molasses. Feed consumption and body weight were not affected by the presence of molasses in the feed.

TABLE 2.—*Description of the experimental rations.*

Lot	1	2	3	4	5
Bran	300	300	300	300	300
Ground oats	300	300	300	300	300
Cornmeal	700	700	700	600	600
Middlings	250	250	250	250	250
Barley meal	100	100	100	100	100
Alfalfa leaf meal	150	150	150	150	150
Beef meal	25	25	25	25	25
Fish meal	75	75	75	75	75
Cod liver meal	25	25	25	25	25
Bonemeal	50	50	50	50	50
Powdered buttermilk	25	—	—	25	—
Molasses	—	—	25	100	125
Charcoal	10	10	10	10	10
Calcium carbonate	20	20	20	20	20
Salt	20	20	20	20	20

TABLE 3.—*Egg production, feed consumption and body weight of laying hens fed on rations containing molasses.*

Lot	1	2	3	4	5
Number of birds	20	20	20	20	20
Mortality	5	6	4	2	3
Average hen days	126.60	127.95	128.65	130.60	132.70
Per cent production	38.90	42.12	31.71	30.09	26.07
Feed consumed per bird per day (grams)	109.81	114.15	115.47	111.31	114.68
Water consumed per bird per week (grams)*	1412.66	1167.16	1298.33	1550.66	1439.60
Body weight (grams)					
Start of trial	1608	1523	1539	1544	1454
End of trial	1756	1828	1725	1802	1768

\* Average for one week in every four weeks.

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# THE PHYSIOLOGICAL EFFECT OF LOW TEMPERATURE ON THE BIENNIAL GROWTH HABIT OF SWEET CLOVER (*MELILOTUS ALBA*)<sup>1</sup>

I. J. JOHNSON<sup>2</sup>

University of Minnesota, St. Paul, Minn.

[Received for publication November 10, 1932]

The rapidity of improvement of sweet clover by selection within self-fertilized lines has been somewhat retarded by the biennial growth habit of the plant and the consequent inability to obtain each year a generation of selfed seed. In the breeding technic employed at University Farm, St. Paul, Minnesota, seed of sweet clover has been planted in the greenhouse in February and the seedlings subsequently transplanted to the field nursery. Sweet clover plants from these seedlings have, unlike those of red and alsike clover, failed to produce flowers until the second year of growth in the field.

The present report consists of a study to determine the possibility of using low temperatures to enforce dormancy for a period sufficient to induce flowering during the first year of vegetative growth in the field nursery without seriously interfering with normal plant growth. While supplementary light together with high temperature and low level of soil moisture have been used successfully to force flowering under greenhouse conditions, the plants obtained by this method have been so greatly reduced in size that proper selection has been practically impossible.

## EXPERIMENTAL MATERIAL AND METHODS

A single variety of sweet clover known as Alpha 3 was used in the study. This strain was developed at the Department of Field Husbandry, University of Saskatchewan, and differs from other varieties of *Melilotus alba* by its dwarf growth habit and fine leafy stems. Seed of Alpha 3 was planted on February 15 in three-inch pots in the greenhouse and also between folds of absorbent paper. The seedlings in pots and the germinating seeds in paper dolls were subjected to a temperature of 0°C for periods of different durations and then returned to normal greenhouse temperatures until they were transplanted to the field. The germinating seeds in paper dolls were transplanted to three-inch pots immediately after exposure to the low temperature.

Two periods of dormancy, one for 10 days and the other for 20 days, were used with the germinating seeds. Four paper dolls each containing approximately 100 germinating seeds were placed in the cold chamber on the same day. At the end of the first 10-day period one lot was removed to the greenhouse and another subjected to an additional low temperature of -3°C for 16 hours. A similar treatment was employed at the end of the 20-day exposure, one lot being removed to the greenhouse and another subjected to a temperature of -3°C for 16 hours.

The seedlings used in this study were placed in the constant temperature room at two stages of development, one lot being treated when the plants

<sup>1</sup> Contribution from the Department of Agronomy and Plant Genetics, University of Minnesota, St. Paul, Minn. Paper No. 1145 of the Journal Series, Minnesota Agricultural Experiment Station.

<sup>2</sup> Assistant Agronomist.



had reached a three-leaf stage and the other when the plants had grown to a height of three inches. Since the seed was planted on the same day the larger seedlings were placed in the low temperature room one month later than the three-leaf stage seedlings. Three periods of 10, 20, and 30 days of enforced dormancy at  $0^{\circ}\text{C}$  were used with each group of plants. At the end of the first 10-day period one lot was returned to the greenhouse and another subjected to a temperature of  $-3^{\circ}\text{C}$  for 16 hours before removal to normal temperatures. The seedlings at the end of the 20- and 30-day exposure were not subjected to additional low temperature. Each separate lot used in this study consisted of from 17 to 25 plants.

The seedlings were transplanted to the field nursery on May 10 and spaced at three-foot intervals. The three-inch plants subjected to the 20- and 30-day dormancy period were not transplanted until three weeks later to allow the full duration of their exposure. Two thousand transplanted seedlings of Alpha 3 were used to check the effect of the low temperature treatments.

### EXPERIMENTAL RESULTS

The results obtained from this study show that the dormancy period of biennial sweet clover may be broken by relatively brief periods of exposure to a temperature of  $0^{\circ}\text{C}$ . Plants from germinating seeds subjected to periods of enforced dormancy failed to produce flowers during the first year of growth in the field nursery. The plants resembled those from the check in all general growth characteristics.

Plants obtained from seedlings subjected to enforced dormancy when at a three-leaf stage of development flowered during their first year of growth in the field nursery. All plants from seedlings kept at  $0^{\circ}\text{C}$  for 20 and 30 days flowered profusely while approximately 75% of the plants from the seedlings kept for 10 days in enforced dormancy produced flowers. Most of the plants from the 10-day dormancy seedlings flowered sparingly and were nearly one month later than those from the 20- and 30-day dormant seedlings. These results indicate that a 20-day dormant period is near the minimum requirement to effectively induce flowering in Alpha 3 sweet clover during the first year of growth in the field. Plants from seedlings given an additional low temperature of  $-3^{\circ}\text{C}$  for 16 hours at the end of the 10-day period were identical in all respects to those not frozen.

The plants from seedlings subjected to enforced dormancy when three inches tall also flowered during the first year in the field nursery. All plants from seedlings kept at  $0^{\circ}\text{C}$  for 20 and 30 days flowered profusely, while several plants from seedlings kept for 10 days at the same temperature flowered poorly. This again, as with the three-leaf stage plants, indicates that a 20-day dormancy period is near the optimum for satisfactory results. The additional low temperature treatment of  $-3^{\circ}\text{C}$  at the end of the 10-day period failed to increase flowering. While all of the plants from the three-inch seedlings flowered nearly one month later than comparable treatments made with three-leaf stage plants, the difference is believed to be due largely to the date at which the plants were removed from their enforced dormancy, the larger seedlings being removed from the low temperatures one month

after the smaller seedlings. This response suggests that a relatively constant period of time must lapse from the end of the dormancy period to beginning of flowering.



Figure 1. Flowering (left) and non-flowering plants of Alpha 3 Sweet Clover.

Alpha 3 plants which successfully flowered during the first year of growth in the field nursery are shown in Figure 1 in comparison with the non-flowered checks. A comparison of their growth habit shows that the vegetative growth of the first year flowering plants is much larger than the check and compares favorably with the second year growth of normal Alpha 3. This method of inducing flowering should therefore in no way hinder selection of the best plants for selfing from the standpoint of vigor, disease reaction or other plant characters.

#### SUMMARY AND CONCLUSIONS

1. Germinating seeds and seedlings at two stages of development of Alpha 3 sweet clover were subjected to periods of enforced dormancy in an attempt to induce flowering during the first year of vegetative growth in the field nursery.

2. Germinating seeds subjected to enforced dormancy for periods of 10 and 20 days at  $0^{\circ}\text{C}$ , and for 10 and 20 days at  $0^{\circ}\text{C}$  followed by 16 hours at  $-3^{\circ}\text{C}$ , failed to produce plants which flowered during the first year of growth in the field.

3. Seedlings of Alpha 3 sweet clover subjected to enforced dormancy when at the three-leaf stage of development produced plants which flowered during the first year in the nursery. Plants from seedlings subjected to enforced dormancy at  $0^{\circ}\text{C}$  for periods of 20 and 30 days were superior to those from seedlings kept for a 10-day period at the same temperature. This suggests that a 20-day seedling dormancy period is near the optimum required to induce flowering during the first year.

4. Plants obtained from seedlings subjected to enforced dormancy when three inches tall gave the same general type of response as those treated at an earlier stage. Although these plants flowered at a later date, it is believed that this response was due primarily to the date at which the seedlings were removed from their dormancy. The older seedlings were removed one month later than the younger seedlings.



# A NOTE ON PILCHARD OIL FOR CHICKS

V. S. ASMUNDSON<sup>1</sup> and W. JOHN ALLARDYCE<sup>2</sup>

*University of British Columbia, Vancouver, B.C.*

[Received for publication September 1, 1932]

The purpose of this short note is to place on record the results of a single experiment with pilchard oil. Since the many experiments with this oil have recently been reviewed by Gutteridge (1) and others they will not be referred to here.

## EXPERIMENTAL

For the experiment reported herein crossbred chicks, from Barred P. Rocks and Light Sussex females mated to S. C. Rhode Island Red males, were used. The chicks were divided as evenly as possible into six lots according to ancestry. Of the 13 chicks in each lot at the beginning of the experiment, there were 4 females (to 9 males) in lot 4, 5 females in lot 5, and 6 females in lots 1, 2, 3 and 6. At the end of the experiment 5 representative chicks (3 males and 2 females) were selected from each lot for the ash determinations on the tibiae. The ash determinations were made by the method described by Hart, Kline and Keenan (2).

A ration recommended by Hart, Kline and Keenan (2) was fed. This ration is composed of 50 parts (by weight) ground yellow corn, 25 parts standard wheat middlings, 12 parts crude casein, 1 part common salt, 1 part precipitated calcium carbonate, and 1 part dried yeast. The ration was supplemented as follows. Lots 1 to 3 were fed 1% of pilchard oil from the same batch. A sample was taken from the tank and part of it fed without further treatment to lot 3. It is referred to as commercial pilchard oil. The remaining portion of this batch of oil was cold cleared and divided into cleared oil containing very little stearin and the residue, which contained about 40% stearin or solid settlings. These oils were fed to lots 1 and 2 (see Table 1).

TABLE 1.

Lot No.	Oil fed	No. of chicks started	Data for chicks at five weeks of age				
			Alive No.	Average weight grams	Data on tibia-average for 5 chicks		
					Length cms.	Volume c. c.	Ash percentage
1	Pilchard—40% stearin	13	9	208.9	5.7	1.42	43.80
2	Pilchard—cold-cleared	13	13	221.0	5.7	1.50	43.28
3	Pilchard—commercial	13	12	225.9	5.9	1.65	45.09
4	California sardine	13	12	210.3	5.7	1.40	45.88
5	Cod liver—commercial	13	12	196.9	5.9	1.65	42.89
6	None (controls)	13	12	111.7	4.6	0.95	28.77

<sup>1</sup> Assistant Professor and Assistant Poultry Husbandman, University of California, formerly Associate Professor of Animal Husbandry, University of British Columbia.

<sup>2</sup> Formerly Assistant Professor of Chemistry, University of British Columbia.

Lot 4 was fed 1% of a California sardine oil, while lot 5 was fed 1% of cod liver oil purchased from a feed dealer. Lot 6 was not fed oil. In the case of lots 1 to 5 the oil was mixed into the mash at the beginning of the experiment. The results reported by Holmes, Pigott and Menard (3) and others indicate that it is not necessary to mix the oil into the mash at frequent intervals except when the minimum amount of oil is being fed.

The results obtained are summarized in Table 1. It will be seen that the first five lots attained about the same weight at 5 weeks of age, regardless of the oil fed. The differences in the tibiae of these 5 lots are not significant. On the other hand, the chicks in the (control) lot which were not fed oil showed decided rachitic symptoms at 4 weeks and did not gain in weight during the last week. As was to be expected, the tibiae of the chicks in this lot were much smaller than those of chicks in the other lots. It may be noted that there were no consistent nor significant differences between the males and females and hence only the averages are presented.

There was little difference in the mortality for the various lots, except lot 1, from which 4 chicks died. One of these 4 chicks died on the second, one on the tenth and two on the sixteenth day of the experiment. It is not likely that the greater mortality in this lot was due to the oil fed since the survivors were not adversely affected.

#### SUMMARY

British Columbia pilchard oil, California sardine oil and commercial cod liver oil, when fed at a level of 1%, proved equally effective in preventing rickets in chicks up to 5 weeks of age. Chicks fed the same ration, but without oil, all developed severe rickets. The lot fed pilchard oil containing 40% stearin gave results equal to those obtained with cleared and uncleared oil from the same batch. This probably indicates that one half of 1% of this oil was ample to protect against rickets.

#### ACKNOWLEDGMENT

We are indebted to Mr. F. D. Mathers for the materials used and to Mr. Wilson Henderson for technical assistance.

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## NOTES ON A MITE INFESTING A FLEA<sup>1</sup>

W. E. WHITEHEAD<sup>2</sup>

Macdonald College, P. Q.

[Received for publication March 1, 1933]

During 1931, while examining some fleas taken from Richardson's gopher (ground squirrel), *Citellus richardsoni* (Sabine), Dr. L. G. Saunders of the University of Saskatchewan, discovered that some were harbouring mites, which had the appearance of being within the body cavities of the fleas, as shown by the accompanying photograph (Figure 1). Knowing that the author was interested in the Acarina, Doctor Saunders forwarded the material to him.

The appearance of the position of the mites is an illusion, as subsequent examinations have shown beyond any doubt that the intersegmental membrane is very extensive, and that the mites are actually beneath the overlapping

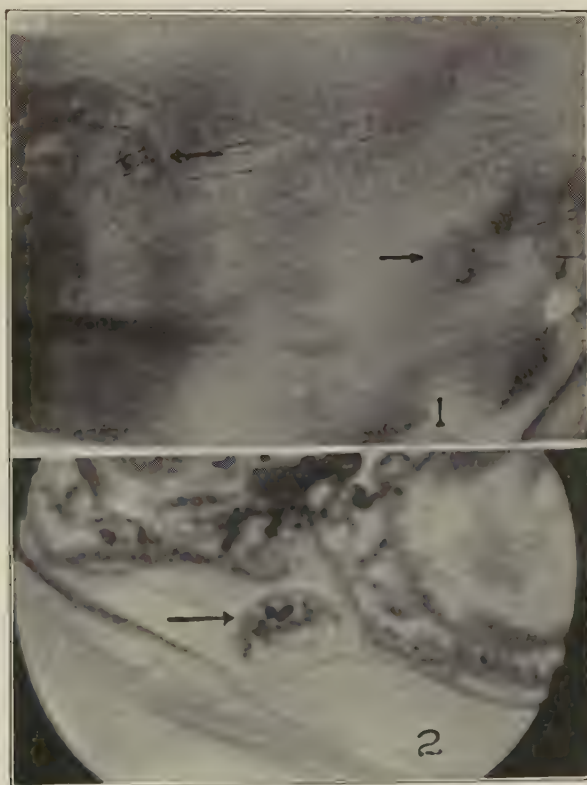


Figure 1. Portion of lateral surface of *Ceratophyllus saundersi* showing two mites beneath overlapping tergites.

Figure 2. Cross section through abdomen of *Ceratophyllus saundersi* showing mite between overlapping tergite and body wall.

<sup>1</sup> Contribution from the Department of Entomology, Macdonald College.

<sup>2</sup> Lecturer in Entomology.

tergites, a condition which is illustrated in Figure 2, which represents a section through a flea's abdomen.

The mites, which have been determined by Dr. H. Graf Vitzthum as being *Tyrophagus putrescentiae* (Schrank 1871), were all in the deutonymph stage and they are said, by this authority, to require no nourishment during this period; consequently they have only rudimentary mouthparts and a rudimentary alimentary canal. They attach themselves to their hosts by means of ventral suckers, and, being also wedged beneath the tergites, are very securely attached.

The association between mites and fleas is not unique, although the separation of the species is very difficult, due to the fact that it is the immature mite that forms this association. Only in a few cases are the adults known; they are free-living, and it is suggested by Doctor Vitzthum that this particular species might be found in the nests of *Citellus*, although some of these have been examined by Doctor Saunders without success.

The flea referred to is of particular interest, in that it is a new species and has been described by Dr. Karl Jordan in "The Entomologist", Vol. LXVI: 16, 1933, as *Ceratophyllus saundersi*, after the collector. Although a number of other species have been examined, this is the only species on which mites were found. The writer was privileged to examine an undetermined flea loaned him by Dr. W. A. Jellison of the Spotted Fever Laboratory, Hamilton, Montana. This specimen bore two mites, which were apparently *T. putrescentiae*, which, if true, indicates the species is quite widespread in the western part of the continent, but whether it has other hosts, has not been determined. In view of the fact that the deutonymph does not feed, the reason for attaching itself to a flea must be for the purpose of transportation. This being the case, there appears to be no reason why it should not attach itself to some other insect, if such were available.

#### SUMMARY

1. The mite, *Tyrophagus putrescentiae* (Schrank 1871) is transported by the flea *Ceratophyllus saundersi* Jordan, which has recently been described as a new species.

2. Only immature mites are associated with fleas. They wedge themselves beneath the overlapping tergites of the fleas, as well as attaching themselves by means of ventral suckers.

3. Very few adults of such mites are known; they are believed to be free-living.



## "SCALYLEG" IN WILD BIRDS<sup>1</sup>

W. E. WHITEHEAD<sup>2</sup>  
Macdonald College, P.Q.

[Received for publication May 9, 1933]

In April 1932, a rusty grackle (*Euphagus carolinus* Linn.) was obtained that had one foot infested with "scalyleg" mite. At about the same time this year two more specimens of the same species showed the same condition, but very much more severe, the infestation extending to the tarsal joint.

The mite was determined by Dr. H. E. Ewing of the U. S. National Museum as being *Cnemidocoptes fossor* (Ehlers). He states that it will probably prove to be a variety of *fossor*. The species was described from a captive weaver bird (Ploceidae) in Germany, so that it is not peculiar to one species of bird, and possibly attacks other species, although so far, it seems that no others have been recorded.

Doctor Ewing, as well as some ornithologists, has been aware of the presence of "scalyleg" in grackles for some years, although there are apparently no published records in North America. The mite is also said to attack the beak of the bird, but this has not been verified by the writer. There is a record in the Report of the Veterinary Director General for 1931 of a willow grouse in the vicinity of Victoria, B.C., being infested with *Cnemidocoptes mutans* Robin and Lanquentin, but this is, as far as can be ascertained, the only record of "scalyleg" in wild birds in North America. For this reason, it is of interest to record the infestation occurring in grackles.



Figure 1. Foot of rusty grackle (*Euphagus carolinus*) affected with "scalyleg".

<sup>1</sup> Contribution from the Department of Entomology, Macdonald College.

<sup>2</sup> Lecturer in Entomology.

## THIRTEENTH CONVENTION REPORT

### PRESIDENTIAL ADDRESS<sup>1</sup>

G. I. CHRISTIE<sup>2</sup>

With more than two thousand workers in the Dominion Department of Agriculture, Provincial Departments of Agriculture, Agricultural Colleges, Veterinary Colleges, Research Institutions and Schools of Agriculture interested in research, resident teaching, extension and administration, the C.S.T.A. meets an urgent need on the part of this large group for a medium of co-operation and fellowship.



In the annual convention large numbers of the members have come together for consideration of problems of interest. They have met and conferred with workers of other stations and Provinces. They have given and received information and inspiration as a result of these conferences and meetings. The individuals have been helped and the whole agricultural service of the Provinces and the Dominion has been benefited and advanced. Research workers and agricultural leaders of Great Britain and other countries have taken a place on the programmes and have presented information of great interest and value. In this way alone the Society has justified its existence.

*Scientific Agriculture*, now in its thirteenth volume, is a real achievement and the result of keen foresight, hard work and leadership. This publication was needed—there was an urgent demand—but it remained for agricultural workers through their own organization to establish the journal and arrange for the necessary finances.

This publication has not only served as an outlet for reported results of research activities, but it has been a stimulus to many workers and has served as an urge to them to complete projects and publish on them. It is true too that many projects are necessarily of long duration and final publication of results will be delayed. At the same time, progress reports are in order and of deep interest. Provinces, Colleges and even the Dominion Department of Agriculture have not always been in a position to give the necessary help in publication of the papers. *Scientific Agriculture* has been available and has been used. One is also greatly impressed as he looks over the volumes of *Scientific Agriculture* with the range and extent of research now under way in Canadian institutions. He is even more impressed with the quality of work and the encouraging, helpful results coming from these efforts. The editorial staff deserves sincere praise and appreciation for the standard established and maintained. *Scientific Agriculture* is recognized and is given a leading position among the scientific publications of the world.

<sup>1</sup> Resumé of address delivered at C.S.T.A. Banquet, Regina, July 26, 1933.

<sup>2</sup> President, Ontario Agricultural College, Guelph.



Enthusiasm, admiration and confidence may be expressed in reporting the second meeting of the National Advisory Committee on Agricultural Services, held under the leadership of the Honourable Minister of Agriculture, Major Robert Weir. Every member of the Committee was enthusiastic over the programme which was pertinent and concerned with immediate problems. They also approved of the plan of sub-committees where opportunity was given for full discussion and the presentation of the views and plans of different sections of the country. Admiration was shown and expressed for the capable and energetic leadership given by the Honourable Minister of Agriculture and the new Deputy Minister of Agriculture. These men had called the Committee together—they had a purpose and sought to get action which would prove helpful in solving the larger and more difficult national agricultural problems.

The plan initiated to appoint permanent standing committees on important problems and activities gave heart and confidence to every one interested in the co-ordination of efforts of agricultural workers. Standing Committees will give active study to the problems, methods involved, plans for extension and improvement, need for co-operation and co-ordination and report back to the National Committee. Workers will co-operate with these Committees and will find them of assistance. The appointment of these Committees is a forward step and lends permanency to the whole movement.

The C.S.T.A. takes some credit for a part in this larger national project. Our Committees on Agricultural Policies and on Education and Extension for a number of years have studied plans and have made recommendations. They have felt the need for co-operation of workers and forces and have urged it at every opportunity. The Executive of the C.S.T.A. has had the pleasure of co-operating with the Honourable Minister of Agriculture and sincerely appreciates the courtesies and considerations extended to the Society. Our General Secretary has been honored with the position of Secretary of the National Advisory Committee on Agricultural Services. He is capable and is giving most valuable assistance.

The C.S.T.A. in a few years has laid a solid foundation for an important work. It holds the respect and confidence of the agricultural leaders of the country. Larger opportunities for service lie ahead and the Executive of the Society is fully alive to these. The agricultural workers of Canada cannot afford under any condition to be without an active organization. This organization should be well supported and in a strong position to render service and to give leadership in the larger projects in which they are interested. The Society enjoys a strong membership at the present time. It deserves a larger membership for 1934.

## REPORT OF THE GENERAL SECRETARY

H. L. Trueman<sup>1</sup>

During the period from June 1, 1932 to May 31, 1933, we have met with many problems which have taxed the resources of the Society to the utmost. In company with all organizations of a similar nature, we have had to review our policies and take stock of our assets and liabilities in the light of present conditions. The spirit in which the situation has been faced and the loyalty of officers of the Dominion organization and of the local organizations have been all that could be desired. The General Secretary desires to place on record his appreciation of this co-operation.

### MEMBERSHIP

On May 31, 1932, the membership of the Society was 1209, made up of 1177 regular members, 6 life members, and 26 student members. Since that time it has been necessary to remove the names of 92 members. During the same period 41 regular members have been admitted and 10 new student members, making a total of 51 new members, and a grand total of 1168 members. This is very gratifying under the present conditions. It is hoped that with improving conditions the loss of members may be checked and that in the near future we may look for further increase in regular membership. The foregoing information is is tabulated below.

#### 1932 MEMBERSHIP

Life members.....	6
Student members.....	26
Regular members.....	1177
Total.....	1209

#### TAKEN OFF

Student members removed.....	2
Resignations, non-payment and death.....	90
Total.....	92
Balance.....	1117

#### NEW MEMBERS

Regular members.....	41
Student members.....	10
Total.....	51
Total present membership.....	1168

### SCIENTIFIC AGRICULTURE

There has been no major change in the editorial policy of the official organ of the Society, *Scientific Agriculture*. There have been however, minor changes which are felt to be an improvement. The Committee on Publications last year placed a limit of twelve pages on the length of articles. Additional pages may be used provided the author can arrange for payment

<sup>1</sup> General Secretary, Canadian Society of Technical Agriculturists, Ottawa.



of part of their cost. The general effect of this ruling has been to increase the number of shorter articles, thus allowing for greater variety in each issue of the magazine. Additional articles on economics, sociology, and general agricultural policy have been included. It is expected that this policy will be continued.

### THE TEXT BOOK CLUB

The Society still finds it advisable to continue the operation of a purchasing service for members, allowing a 15% discount from the list price of agricultural and scientific books. The service is of particular convenience to members located at some distance from purchasing centres, and many men save annually a considerable portion of the cost of their membership fee through this service.

### LOCAL BRANCHES

All local branches of the Society have functioned during the year. No new ones have been organized and it is felt that we are now operating at practically all of the main centres around which technical agriculturists gather.

While there is considerable variation in the activities of locals, it is of interest to note that the Dominion organization is so shaping its programme that some of the effort of the locals is being concentrated on one or two major problems each year. Much of the strength of the Society rests in the activities of the local branches and the efficient work of their executives is to be strongly commended.

### TRAVELLING

During the past year the amount of travelling done by the General Secretary has been more than was anticipated. The past fiscal year of the Society includes the trip to the Winnipeg convention and a complete tour of the Western provinces in February 1933, following a meeting of the programme committee of the World's Grain Exhibition and Conference. A trip was made to the Maritime Provinces in which the executive of each local was visited. Unfortunately it was not possible to get the members of the locals together at the particular time in which the trip had to be made. In company with the Dominion President, Dr. G. I. Christie, a trip was made to Quebec city and Montreal, and the General Secretary has also visited the Ontario locals. Owing to assistance which was given from various sources, the expense of these trips to the Society has been kept to a minimum. If it had not been for this assistance, which is gratefully acknowledged, it would not have been possible to visit the locals during this critical period.

### GROUP ORGANIZATION

Several societies and groups which are affiliated with the C.S.T.A., have continued their co-operation in matters of mutual interest. An Agricultural Engineering Section of the C.S.T.A. was organized at the Winnipeg Convention. This group is taking an active interest in the organization of its specialists throughout Canada. At the present convention the Dairy Science men of Western Canada are meeting with a view to the organization of a Dairy Science group.

## STANDING COMMITTEES

Two standing committees of major importance have continued their activities from the previous year. The C.S.T.A. Committee on Research has continued its work of conducting a survey of agricultural research under way in Canada. It is felt that our Society, covering as it does the whole Dominion and having affiliations with several specialized groups, is in a sound position to act as a clearing house for this type of information. Affiliated groups and societies have been co-operating with the C.S.T.A. in collecting material in their respective fields. In cases where there is no organization of specialists covering a certain field, we have had the hearty co-operation of Branch and Division Chiefs of the Dominion Department of Agriculture.

The C.S.T.A. Committee on Education and Extension has conducted a survey of opinion regarding extension methods. Practically all of the locals considered the subject from many angles and a comprehensive report has been prepared for the consideration of this convention.

## HEADQUARTERS

During the past year the Society continued to occupy the headquarters at Ottawa provided by the five-year agreement with a group of industrial organizations. This agreement provides sufficient funds to carry the office rental to the end of the present Society year, that is, May 31, 1934. Steps will of course be taken during the present year to make some arrangement for re-financing the office rental fund. The location of the office has been moved to the Runge Press Building, where our magazine is printed. The Society has a good friend in the person of Mr. F. W. Runge, Manager of the Press, and we have more office space than we had in our previous quarters at a very much reduced cost.

## EMPLOYMENT BUREAU

Under present conditions this branch of service is not very active. The Society keeps in close touch with Civil Service Commissions and commercial organizations employing technical men, and members are recommended from time to time as opportunity affords.

## THIRTEENTH ANNUAL CONVENTION

Arrangements for this the thirteenth annual convention have been made to comply with existing conditions. The actual time of the business part of the convention is confined to the one day; following that the Society joins with its affiliated groups and the World's Grain Exhibition and Conference in holding a series of technical sessions. The active co-operation of officers of these various organizations has been greatly appreciated. The opportunity of meeting with a large number of technical experts assembled in Regina is greatly appreciated by members of the Society. We wish particularly to commend the work of the South Saskatchewan branch in organizing to handle the convention.

## NEW OFFICERS

Ballots for the election of the officers of the C.S.T.A. for the year 1933-34 were opened on May 1, 1933, at the Society headquarters. A total of 692 members voted with the following results: President, Hon. Dr. J. A. Godbout, Minister of Agriculture, Quebec, P.Q.; Vice-Presidents, Mr. L. H.



Newman, Dominion Cerealist, Ottawa, and Rev. Father Leopold, Director, Oka Agricultural Institute, La Trappe, P.Q.; Honorary Secretary, Mr. Geo. H. Clark, Dominion Seed Commissioner, Ottawa.

#### SPECIAL ACTIVITIES

While the time of the General Secretary and his assistant is fully occupied with the normal activities of the Society, occasion arose this year to lend the services of the General Secretary for two projects.

Assistance was requested by the Dominion Minister of Agriculture in the conducting of a National Conference on Agricultural Services in Toronto in August 1932. The Dominion Executive of the C.S.T.A. assisted in planning the programme for this conference and the General Secretary acted on the Secretariat of the conference. The same service has been given in connection with the second conference just concluded in Regina and the General Secretary has been named as a member of the Executive of the National Advisory Committee on Agricultural Services.

The Executive of the World's Grain Exhibition and Conference felt that the C.S.T.A. was particularly qualified to assist in conducting the conference side of this event. Accordingly, the General Secretary has been acting as Secretary of the Programme Committee of the World's Grain Conference. This has involved a considerable amount of extra work and some clerical assistance has been provided by the Grain Conference Executive.

#### FINANCES

While the activities of the Society have probably never been conducted on a wider scope with more far reaching possibilities for the good of the profession than they have this year, the financial situation has given us considerable concern. The whole matter of maintaining the publication of research was reviewed by the National Advisory Committee on Agricultural Services at their recent meeting, and it is anticipated that arrangements will be made for carrying on the publication of *Scientific Agriculture* at its normal size. The whole matter of finances is to be reviewed by the Board of Directors. It is felt that the worst of the financial depression is past and plans are being made to maintain all the essential activities of the Society. The full support of the membership is requested during these difficult times.

The manner in which local branches of the Society and affiliated groups have come to our support during the past year has been a source of encouragement. All locals have retained 10% of the membership fee instead of the customary 20%. The Toronto local and the Ottawa local each made substantial grants to the Dominion organization to assist in financing. The western Canadian Society of Agronomy granted \$100 for assistance in publishing *Scientific Agriculture*. All this assistance is greatly appreciated and is interpreted as an indication of the desire on the part of these organizations to see that the services of the Society are maintained.

## REPORT OF THE C. S. T. A. COMMITTEE ON EDUCATION AND EXTENSION

### PART I. CHAIRMAN'S SUMMARY

In preparing a report on education and extension your committee has been in communication through district committees with the various locals of the Society throughout the Dominion. A number of reports have been received and studied and a careful survey has been made of the field from the standpoint of education and extension in so far as it has been possible to do so. The consensus of opinion thus expressed has been summarized and will be presented for consideration as a part of this report.

In a study of the questions involved, your committee has had before it the reports of previous committees reporting for this Society, whose conclusions, especially those of the C.S.T.A. Committee on Agricultural Policies and the C.S.T.A. Committee on Educational Policies, have direct bearing on the most important features of our responsibility at this time. Notice also has been taken of the report of the Select Committee on Extension, Publicity and Publications, made at the National Conference on Agricultural Services held in Toronto in August, 1932.

Consideration has been given to the range and character of agricultural education and extension, and the committee is in general accord with the opinions expressed by previous committees reporting on these questions. Similarly it is in general agreement as to the division of authority as between federal and provincial institutions, in so far as it has seemed desirable to indicate respective jurisdictions. It must, however, be kept in mind that when previous reports were dealt with by meetings of this society, economic conditions in this country were less serious and the world outlook for markets for Canadian products more promising than they are today. For a considerable period prior to three years ago this country developed rapidly and leaders in administrative agriculture were ever on the alert to provide new services and extend existing organizations where it was believed the business of farming would be advanced. They have always realized, and we desire at this time again to emphasize, the fundamental and economic importance of agriculture in our national structure. Governments alert as to the best means of promoting the country's prosperity have never hesitated to support methods of increasing the productivity of the soil and the value of the products therefrom.

Recently the possibility of continuing as in the past to give financial support in promoting the interests of agriculture has come under review. Canada, like other countries, finds itself faced with a heavy burden of taxation, and the necessity for retrenchment appeals to every man in public authority. It is apparent that we cannot go on providing services, except where such services bear a fair relationship to the monetary rewards that may be reasonably expected therefrom.

To that end the efforts at present being made toward co-ordinating federal and provincial activities by the appointment in certain provinces of



problem committees dealing with undertakings with which the federal and provincial authorities both are interested, are to be commended. It is evident that a decided improvement in federal and provincial relationships has been effected where this system has been adopted, but there is still a great deal that should be accomplished in this connection, especially in provinces where comparatively little so far in the matter of co-ordination has been carried into effect. The meetings called at Toronto in August last by the Federal Minister of Agriculture, and again this year in this city, attended by provincial ministers and officers from all departments of agriculture, have made progress toward future understanding and more effective administration.

After reviewing all that has been accomplished by co-operative effort and as a means of co-ordinating activities, it still remains a question, in view of the importance of the problem of duplication and the need for national economy consistent with the proper status of agriculture, whether the time has not come to examine carefully and to evaluate the entire field of activity in agricultural education and extension throughout the Dominion. We believe the question may well be asked, and requires an answer, *what are the fundamental public services in agriculture that can be fully justified under existing conditions?* Are we providing services which, however useful they may appear, are not worth to the people of this country what they are costing and for which the people in the long run are required to pay?

If, for the sake of economy, eliminations in services are to be made, should we not be able to assure ourselves as agricultural leaders, as well as our fellow citizens of other professions, that these services with which we are dispensing are those which we can best afford to give up. An enquiry or investigation such as that suggested could be effective only, it is true, if undertaken with the common consent of interested departments, federal and provincial, but it should be no longer a problem merely as to whether a province or the federal government have control. Respective jurisdictions have been fairly determined already. It has now become a question of what can we afford and how can it be most economically provided.

At this time it is perhaps desirable that the field of agricultural education also be considered in the light of national economy. Evidences are not lacking within the last two years that certain provincial governments, who by constitutional right control all educational functions within their territory have considered it necessary to reduce, in some cases drastically, the amounts available for agricultural training. The action thus taken it is not the purpose of this report to criticize, but it does suggest in our judgment that the whole question of financing agricultural education should be carefully appraised and a conclusion reached as to the extent to which facilities should be provided for those who wish to prepare themselves for more effective service in the interests of agriculture.

From an examination of programmes of study provided by various faculties and staffs engaged in teaching agriculture throughout the Dominion, this committee has no hesitation in stating that the range of teaching is not more advanced nor extensive than the needs of agriculture as an industry nor its importance in our national economy fully justify. This conclusion has been reached after careful comparison of facilities made available for study in relation to the technical and scientific aspects of other industries

and activities of life. In fact, it is only within the last few years that agricultural teaching throughout the Dominion can be regarded as having reached a status at all comparable with other subjects of similar importance. Our faculties of agriculture, we consider, are to be commended highly upon having made available opportunities for studies such as are within the range of those who contemplate agricultural leadership, and of a character commensurate with the dignity and importance of the profession.

But while recognizing the fine character of agricultural courses, we are not in a position to indicate whether these courses may be so balanced as to best suit the needs of all who should benefit therefrom. In the evolution of agriculture it must be recognized that while the farm is a home as well as a place of business, and that the social and ethical standards of life call for consideration, it is perhaps more than ever being looked to as a place where monetary progress is important. The farmer, recognizing his obligations as a public tax payer, is more than ever inclined to expect public institutions such as those providing courses in agriculture, to offer training that will enable him to increase the rewards for his farming efforts. To those who make a survey of our needs, it is apparent that our education should be for producers, as well as teachers, administrators and research workers, in preparation for effective life work in the interests of the state. We cannot afford to exclude any of these branches. The balance of emphasis to be laid upon so-called practical courses adapted to the needs of those who are intimately associated with production, as compared with studies qualified to equip research workers, will depend upon the conditions existing in any given province, and this committee wishes to emphasize quite strongly that courses in agriculture, while stressing the importance of advanced studies, always must be of such character as to command the goodwill and popularity of practical farmers; otherwise the state itself cannot be expected to continue indefinitely providing public support on a scale commensurate with the importance to its future of proper agricultural education.

In preparing a report on agricultural extension this committee has noted that previous committees, especially the C.S.T.A. Committee on Educational Policies for 1931, dealt very thoroughly with the subject, including organization of extension workers, technique, conditions for effective work, sources of information and training, and it is not therefore our purpose at this time to review what has been done, but rather to add the following observations which we believe should be emphasized at this time.

1. *The object of extension service.* This may be summarized as an effort to make available to the people, especially within rural communities, practical information concerning agriculture and home economics, so presented as to encourage its use in the advancement of community progress. It has been stated that the economic objective is nearly always fundamental, and it is true that without it social progress is limited in its range of achievement. But economic development, however great its importance, is only a means to an end, the real object being the development of the best attributes of the rural people. Attitudes of mind and capacity for accomplishment must be fostered that our people may be the better qualified to deal with our problems, individual and civic, that arise from time to time.

2. *The need for extension service.* We believe there never has been a time when it was so necessary that opportunity for instruction and study should be extended throughout the country as now. Means of communication have greatly improved in recent years and country people especially are expecting to be informed. They are desirous of information that will help them to live and discharge life's responsibilities more effectively, and let it be not forgotten that public support for services that may be absolutely essential will be manifest only as the need for such is clearly understood. Without extension in some one or more of its most effective forms the people cannot know, nor will they fully understand what may be essential for national betterment.

3. *Who should be identified with extension service?* The answer to this is: all institutions and agencies organized for the purpose of contributing in any way toward community progress.

Herein lies a problem in organization which has not yet been mastered effectively in this country. Everyone in public service in agriculture already has or seems prepared to give his support to resolutions endorsing co-operation. Some progress, it is true, has been made through provincial committees and otherwise at the instance of individuals prepared to co-ordinate certain of their activities with others, but much remains to be done.

Has the time not come when it is possible to so reorganize that the farmer will receive through one channel only such instruction and guidance as can be given him? To him it is confusing when there is more than one channel. Can we not have in each province an extension supervisor appointed, if you will, under joint provincial and federal jurisdiction, who will control the range and character of the assistance being given by way of instruction? It has been done most effectively in other countries—why not here? Through such an officer the sources of information, both federal and provincial, would be supplied by field agents or agronomes to the men on the land. Duplication would be avoided and services could even be improved without increase in cost. All agencies now existing for the improvement of agriculture would have direct connection with the land through the provincial supervisor acting as the funnel through which the stream to the farm would flow. We believe the sooner such co-ordination of extension activities can take place, the stronger will be the service and the more highly the work of departments of agriculture and agricultural colleges will be regarded by the men on the land. In effecting such reorganization we believe that in the end no competent officer need fear lack of prestige or influence. The proposal is essentially of such character as to enhance the status of those connected with it. It has not meant depreciation of status elsewhere.

The same is true of provincial as against federal interests. There are already more or less clearly defined functions which each can best perform. This Society has discussed the question of the respective jurisdictions and there is no serious difference of opinion. It is clear that every farmer should have opportunity to benefit by the institutions provided by the federal department, as well as by those of his own province. There should be no restriction savoring of prejudice of any character permitted to intervene between the usefulness to the man on the land of any source of information and help, whether provincial or federal in its control.



## PART II. RECOMMENDATIONS OF C. S. T. A. LOCALS ON EXTENSION METHODS

All local branches of the Society were asked to consider the extension work in their territory from the following angles:

1. Co-ordination of services between governments and between departments of the same government or institution.
2. Variations in extension methods due to regional conditions.
3. The effectiveness of various forms of publicity and publications.

An attempt has been made in this section of the report to summarize the recommendations from C. S. T. A. locals, quoting where the statement of the case seems to be particularly apt. References to specific problems in the various provinces are not included in this report of the Dominion-wide committee, as it has been felt that these are matters for adjustment by the authorities concerned. This report attempts rather to state in further detail certain principles which have been advocated by the C. S. T. A. in previous reports.

### CO-ORDINATION OF SERVICES

The following section of the report of the Eastern Ontario Local (Ottawa) is quoted as presenting ideas expressed in varying form in reports from several of the locals.

"This committee endorses the following paragraph in the report of the Select Committee on Extension, Publicity and Publications presented at the National Conference on Agricultural Services in August, 1932:

'Co-operation in the planning of programmes is most important. It is recommended that each Provincial Advisory Committee arrange for a conference of Provincial and Federal extension workers, so that all programmes and activities may be considered, and agreed upon, well in advance of the time that these are to be announced and undertaken. This will do much for a more effective service and do away with misunderstanding and confusion.'

The above resolution emphasizes co-operation between Federal and Provincial services. It should be noted that the same principle should apply in the relation of one branch of the federal service to another, and between provincial branches and institutions within the several provinces. While lack of unified control may be cited at times as an excuse for failure to co-ordinate between Federal and Provincial services, there is at times painful evidence of a lack of co-operative planning between services under one control.

It is recommended that certain definite steps in the planning and conducting of programmes be followed, whether between federal and provincial services or between branches of the one service, as follows:

1. Administrative officers should first agree that a general plan of joint action should be followed.
2. The details of the plan should be worked out by administrative officers, extension leaders and field men, in joint committees, and agreement on methods of field work reached before the programme is announced.
3. Agreement should be reached between administrative officers as to the supervision of the programme when it is put into effect.

It is further recommended that commercial organizations conducting extension services in agriculture be strongly urged to co-operate with government services in programme planning.

In the matter of co-ordination between extension and research services, it is suggested that there is need for a better understanding on the part of the extension men as to what the research man is doing. The work of the extension man is largely concerned with getting people to do things. His tendency in reading the current scientific literature and in making contacts with research services is to look for information which is immediately applicable to the problems at hand. This type of information is not sufficient to keep any technical agriculturist abreast of the fundamental advances of science in agriculture. This committee feels that there is a gap between the extension man and the research man which could be bridged by an information service, designed to report in understandable terms the progress of research and experimentation. This information service should report not only researches completed but researches under way, in order that the extension man may be able to tell farmers that certain problems which are not yet solved are at least being attacked in an intelligent manner. Just whether such a service might be given by colleges and universities, by the existing federal publicity services or through some other medium, is a matter which might well be considered. The fact remains that such a service is given to a very limited extent in Canada and that both extension and research men are the losers thereby."

The same idea is amplified in the report from the North Saskatchewan Local (Saskatoon).

"Men engaged in extension work have voiced the opinion on more than one occasion that they are unable, by reason of the nature of their work, to keep abreast of the times in the knowledge of their science. They have felt also, that research workers, educationists, and other elements of the C.S.T.A. membership have received the lion's share of attention by the Society. In this regard, the journal (*Scientific Agriculture*) has come in for its share of criticism and the suggestion has been made that its policy of publishing only scientific articles of a technical nature should be modified in order that articles of a more popular kind may be included.

The members of the North Saskatchewan Local approve of the journal in its present form. They recognize that a scientific journal must contain research articles of a high order if it is to command the respect of other scientific institutions and maintain the status of the society which it serves. They also recognize that so-called popular articles are not admissible in a scientific journal. At the same time, they feel that, if necessary, something should be done to meet the requirements of men engaged in extension work.

It is primarily the function of the Director of Extension at headquarters to keep the men in the field well supplied with scientific but practical, and above all, timely information. This type of information, when it has become more or less standard, is always to be had in farm journals and in the more permanent form of bulletins. We believe that the results of scientific experiments when first published are usually too new and fragmentary to admit of immediate practical application and that it is not so much the recent

findings of scientific investigation that are required by men in the field as "timely" information of a practical nature.

We would suggest, however, that critical reviews of scientific research could be published with advantage from time to time. Papers of this kind are valuable for men engaged in non-technical work if they bring together and co-ordinate the results of investigations in a given field and are written with a minimum of technical terminology. Articles of this kind, when they are required, should be arranged for and solicited by members of the editorial board and it is important that they should be written by research men who are fully qualified to undertake their preparation.

Another service which we believe the journal could perform and one which would be appreciated by everyone is the listing of Canadian bulletins and circulars as soon as they are published, together with brief statements of the nature of the material which they contain.

We do not consider that an abstracting service for scientific articles would be practical both because of the multiplicity of publications and the the difficulty of getting the work done. Moreover scientific articles invariably include a summary of the results which they contain.

It should be made possible, as far as practical, for extension workers to take advantage of the many opportunities for personal contact with men in other lines of work. Such opportunities are provided by conventions and other meetings at agricultural colleges, experimental farms, departments of agriculture, and C.S.T.A. local meetings. The extension men should also, by correspondence, avail themselves of the services of technical men at educational institutions, experimental farms and elsewhere. Requests for information should receive every possible consideration by specialists in the agricultural departments concerned."

The Central Ontario Local (Toronto) emphasizes the need for co-ordination in programme planning.

"This committee is of the opinion that the most essential step toward co-ordination of all extension services in agriculture is that federal, provincial and county units each have a definite programme. We believe that the provincial programme should be first considered. In the planning of such, committees on each main division of the industry should be consulted.

These committees should include representatives of each of the provincial services interested and the federal extension men in the province. Representatives of other organizations, which maintain extension services such as fertilizer companies, packers, railways, feed companies and the farm press might be called in for the discussion of certain phases of extension or educational work. The recommendations of these committees, of course, would be made to the Minister of Agriculture of the Province. After the policy has been decided upon, the same committee should plan how to make the various sections of it effective.

It is assumed that co-operation between the Federal Minister of Agriculture and the Ministers in each Province will be encouraged and facilitated by the National Committee on Agricultural Services as decided upon at the conference held in Toronto in August, 1932. By this means provincial authorities would be consulted when the federal programme is being planned or amended.



The agricultural representatives and others responsible for planning the county programmes would find it distinctly advantageous to have definite federal and provincial programmes before them, with supplementary information on what assistance might be expected from the officers of the various branches of both departments.

Incidentally the committee recommends that the agricultural representative be recognized as the key man in his respective county or district. In other words, other departmental officials, whether provincial or federal, should not attempt to carry on extension work in any area without the agricultural representative being cognizant of the proposed work. This would not only enlist the support and co-operation of the agricultural representative, but would tend to co-ordinate the work and prevent duplication and over-lapping.

We are confirmed in the conviction that provincial-federal committees meeting from time to time in each province and of each branch of the industry are the most helpful means of promoting closer co-ordination of services."

The Montreal City Local advocates more definite federal control through financial assistance.

"This committee feels that there is a definite need for the co-ordination of all extension services in agriculture and that this co-ordination should apply to all federal and provincial activities, different branches of federal activities, different branches of provincial activities, including departments of agriculture and agricultural colleges, and further, the extension services maintained by commercial companies, such as the fertilizer and feed companies, railways, meat packers, etc. It is felt that co-ordination of all activities could best be brought about by the federal department establishing a definite plan of extension work whereby financial assistance is given to projects conducted in each province under strict supervision, and that the definite programs be conducted jointly under federal and provincial guidance such as operates in the United States under the Land Grant College and Smith-Lever plans. Under such a plan the identity of the particular worker's affiliation is lost and consequently the chance of jealousy between departments is largely eliminated.

In the event of the above mentioned plan not being put into effect, we suggest proceeding along the lines indicated at the conference held in Toronto last August, and the establishment of regional, provincial and national committees on agricultural services. In the working out of regional and county plans, it is felt that the agricultural representatives should assume the main responsibility, and further, that all work to be conducted in the territory should be carried on through them. A county or regional advisory committee, if made up of strong local leaders, would greatly assist in developing an agricultural program, and when such a program was decided upon, the local representatives could materially assist in putting such a plan into effect. At the same time, participation on the committee by leading farmers would help to develop local leadership and initiative, which is sadly lacking at the present time."

#### VARIATIONS IN EXTENSION METHODS

The extension man in many cases has had to develop his own methods of attack. The general system he has followed and the weaknesses of ex-

tension work are well stated in answer to a questionnaire sent out in British Columbia.

"In answer to question No. 1 as to how I go about the general educational program that is part of my work. Briefly you might say this is done through farmers meetings, radio talks, newspapers and personal interviews in field, office and over the telephone. However, before any of this is of much value a district man must create confidence by showing his willingness to serve and not dictate. He must build up good will the same as any professional or business man. Once this is done his time is pretty well taken up assisting farmers at their request. As an instance, last year I started a radio service announcing spray dates. This grew into a weekly program covering all agricultural topics. The farmers practically demand this service now. Another system that I find works well when introducing any change of practice, is to work with the better farmers. These men are usually easier to induce to try new things. If successful they usually advertise it well, and the district man can always point to these successful examples to induce the more reluctant ones to adopt new practices. Briefly it is just the same as selling anything. If you have the goods and they are displayed and advertised properly they will sell."

"The general weaknesses in extension services, as I see them, are:

1. Lack of a general continuous programme outline from which to work.
2. Lack of co-operation of departments with the local man, who in my estimation should be in charge of all extension work in his district.
3. Lack of one definite head over all provincial extension work to co-ordinate activities of all departments.
4. Capable and practical men should be selected and placed in the districts where their particular training and capabilities are of greatest value.
5. Extension workers should not be government collectors of monies or weed inspectors or called on to carry out work which will tend to create animosity with the people with whom it is necessary to work."

An approach to the problem of variation in methods is stated by the Eastern Ontario Local (Ottawa).

"While it is quite apparent that the type of farming will determine, to a considerable extent, the general type of extension work done in any one district, it is also true that there are many finer points of extension technique which may easily make the difference between success and failure in the work in any one county or district. This fact has been recognized in the Ontario Agricultural Representative Branch, where the county analysis has been made the basis for a county programme of extension work and general development.

The county analysis is a summary of all important statistical and general information available about the district. This information is usually kept in a loose-leaf form by the agricultural representative and is subject to constant revision. It contains such items as area, types of soil, climatic characteristics, live stock population and marketings, field crop statistics, transportation facilities, the location of cheese factories, creameries, marketing organizations of all types, and all other information available bearing on the

economic life of the district. As the extension man is dealing with people rather than with laboratory materials, the county analysis contains also much information regarding the social life of the people, the population, racial origin, schools, churches, community organizations, political leanings, standards of living, and even more detailed information, such as lists of junior farmers, boys' and girls' club prospects, community leaders, etc.

It must be obvious at once that such a compendium of information throws into relief the major problems of the district and permits the county man to analyze the situation carefully before launching any extension programme. In Ontario, each county representative is required to build a county programme, based upon his county analysis. He emphasizes certain features of the general provincial extension programme as they apply to his district. For his own convenience, he goes even further and prepares a yearly work programme for himself. Month by month this guides him in trying to keep pace with his work.

In the case of a new man coming into the county, the county analysis, county programme and work programme are invaluable.

This Committee recommends that this system be given study by all the services engaged in extension work in order that they may fit into it, rather than attempt to fit the agricultural representative into their programme. The district extension man should be recognized as the key man in his district, and modifications of extension methods in any given programme should be worked out with him to suit his particular conditions and method of working."

The Nova Scotia Local makes the following detailed recommendations regarding methods.

1. That the size of the constituency for extension work be such that the most effective results could be secured, permitting a minimum of mileage, time and effort in keeping with the necessary economy of expenditure.

(a) The extension workers' headquarters should be conveniently and suitably located.

(b) Long distance travel means much loss of time. Furthermore, it is expensive.

2. That suitable demonstrations are a most effective means of emphasizing or introducing proper methods.

(a) They should be practical and suitably selected for the time and place.

(b) These demonstrations should be properly "followed up".

3. That the Illustration Stations be continued and extended where possible.

(a) They serve as excellent demonstrations within limited territories.

(b) Their value has not as yet been fully appreciated.

(c) That the importance of a carefully planned follow-up policy in connection with these illustrations be strongly urged upon not only those directly in charge, but the extension worker or workers in the immediate territories

4. That the short courses receive every encouragement.

(a) The right type of short course is, we believe, extremely effective in "putting across" the proper kind of information.



- (b) The best type of short course, in our opinion, is one emphasizing projects of a definite nature.
- (c) Fewer subjects, carefully discussed by one or two speakers, allowing plenty of time for local discussion is, we believe, most effective.
- (d) We cannot too strongly emphasize the importance of definite lines of action, carefully planned for the district with a follow-up policy to be adopted by the extension workers and community leaders.
- (e) That it is well to keep in mind that in the past our short courses have been the source from which many of our spray circles, shipping clubs, junior clubs and many other important projects have received their initiation.

5. We heartily commend junior club work and urge that it be supported and encouraged.

- (a) We believe special projects should continue to be emphasized through these organizations.
- (b) There is, we believe, however, a field in the junior club work to combine many projects essential to sound farm management and satisfactory rural life into one club.
- (c) That county competitions for club activities be established. (Note) This should not interfere with Provincial or Dominion projects, but rather serve as another link in the chain.

6. That the programme of agricultural societies be expanded to include more activities and thus be of greater service to their community and also become more representative as organizations providing delegates to County Farmers' Associations.

- (a) They should aid in the development of farmers' clubs, study clubs, farm and orchard tours, visits to experimental farms and colleges.
- (b) That greater emphasis should be placed on the developing of local leadership.

7. That provincial competitions should be continued and encouraged.

- (a) Such as pasture fertilizer projects, school fair championships, crop competitions, etc.
- (b) Again we wish to point out that to obtain the desired success, the follow-up work must be carefully laid out.

8. Community programmes have a very important bearing on the prosperity of our rural districts. The extension workers should do everything in their power to develop that type of leadership necessary to plan and put into action these programs. Greater emphasis must be placed on the proper training for this leadership.

9. That co-operative marketing warrants the full support and encouragement of not only the extension workers, but all leaders in agricultural work.

- (a) Their efforts, however, should be devoted mainly to the educational side of co-operative marketing, rather than the actual managership.
- (b) Every means possible should be taken to have leaders trained along co-operative business lines. This is of vital importance in community development.

10. That Departmental exhibits at fairs and conventions should be so designed as to emphasize specific phases of important projects rather than the more general type of exhibit.

11. The matter of bulletins is a very important one. The proper type of bulletin is extremely valuable in extension work. As a special committee has been appointed to study and report on this specific problem, it is sufficient for your committee to mention only its importance in extension work."

The Niagara Local (St. Catharines, Ontario) mentions two important points.

"This committee suggests an investigation of the Quebec system of privately owned and operated demonstration farms. These are not subject to the criticism that is often levelled at government owned farms. In some districts demonstration plots on private farms may be more desirable. In both cases locations should be very carefully chosen and the work should be supervised by a federal or provincial extension man.

Extension men should act only in an advisory capacity with respect to co-operative enterprises. Experience has shown that such movements, if they are to be permanently successful, must be initiated, organized and operated by the farmers themselves".

The Ontario Agricultural College Local places the following valuation on different types of approach.

*Comparative value of extension activities.*

	<i>Evaluation</i>
Practical demonstrations.....	100
Direct services such as Spray Service, Drainage Service, Legume Bacteria Cultures, plans and specifications for farm buildings, equipment, etc.....	100
Distribution of high quality seed and breeding stock.....	100
Co-operation in Boys' and Girls' Club Work.....	100
Co-operation in disease control.....	100
Publications: Printed leaflets with special information for specific emergencies.....	75
Illustrated extension circulars on specific topics.....	75
Comprehensive bulletins.....	75
News stories for daily and weekly press.....	25
Posters.....	10
Groups visiting Colleges (farmers, school teachers, high school pupils, county short course students, Women's Institutes, etc.).....	75
Correspondence (replies to individual enquiries).....	75
Educational exhibits.....	60
Educational trains.....	60
Extension addresses.....	50
Judging at fairs.....	50
Correspondence courses.....	50
Radio broadcasting to town and city people (consumers)	30
Packet Loan Library.....	10
Radio broadcasting to farm people (producers).....	5

## THE EFFECTIVENESS OF VARIOUS FORMS OF PUBLICITY AND PUBLICATION

The Eastern Ontario Local (Ottawa) stresses the demand for bulletins.

"At present there is a heavy demand for many bulletins out of print. Some arrangement should be made to meet this demand. Press items for the weekly and daily press should be brief and should not require boiling down by editors. The usual result of such a process is that essential points are lost or garbled. Press items should have the approval of both the publicity editor and the specialist, before they are released.

Feature articles in farm journals play an important part in agricultural extension work. This committee commends the high standard of agricultural journalism now prevailing in Canada, and feels that agricultural specialists should co-operate with the journals in every way possible.

Maintenance of some type of monthly or quarterly publication on farm subjects by the Federal Department of Agriculture is worthy of consideration especially at this time when there is such a drastic curtailment in publicity in many forms. It would seem reasonable that there should be an official channel of publication of a sufficiently flexible nature to permit of including seasonable material, in view of rapidly changing conditions. It is suggested that such a publication should cover the work of many of the branches of the Federal services, and complementary policies under Provincial control. In short, it should be an official co-ordinating medium of publicity which would make its regular appearance in farm homes, selecting and presenting out of the vast amount of information released those features which are essential to the national progress of the industry".

The Niagara Local (St. Catharines, Ontario) stresses the value of the farm press.

"It is impossible for any person or group of persons to evaluate publicity methods without access to a survey of the field. To be really useful to the farmers, bulletins, circulars and pamphlets must be written in popular style and with a minimum of technicalities. Such general bulletins as poultry raising, vegetable gardening, etc., are usually of widespread interest and fill a very definite need. The farm press is probably the best means of getting information to the farmer and it is a very economical method from the standpoint of the government. Undoubtedly there is urgent need of a survey of publicity methods in agriculture in Canada, including costs as well as effectiveness."

A classification of publications which seems to have merit has been received from an individual source in Alberta.

"Three classes of literature are suggested: First, a rather detailed set up for the use of schools, experimental stations, agricultural agents and extension men, provided with suitable illustrations and a semi-technical treatment of the subject. Bulletins of this kind are useless to the farmer. Secondly, one designed for the use of the farmer, which would be, above all, brief and condensed on the "recipe" basis. The farmer does not read lengthy or semi-technical literature, instead he needs the "recipe" form of information. This class lends itself to suitable groupings of subjects, and is inexpensive. The third class would be for subjects on which frequent correspondence takes place. Therefore, it is suggested that the set up of



this class should be suitable for answering correspondence briefly. A single leaflet might include several subjects, where the subject answered might be indicated.

The above scheme, which can be adapted to suit regional needs (which would be important), is roughly outlined as follows:

*Literature for Extension*

*Three types required:*

1. Educational, being descriptive and semi-technical—for schools, extension men and agricultural agents.

(Examples: Re plant pests)

(a) Bacterial and fungus diseases (subdivided as suitable).

(b) Insect pests.

2. Brief condensed recipe form for use of farmers.

Example: (a) Insects and diseases of: cereal, forage, root and truck crops, and bush and tree fruits, etc.

Illustrate where possible the insect or disease.

3. Leaflets for answering correspondence.

The scheme to be followed under various groups of literature:—

Tree fruit production	Root Crops
Bush and vine production	Truck Crops
Animal	Greenhouse crops
Soils, etc.	Trees
Forage crops	Lawns
Cereal crops	Ornamentals, etc.

All literature may be sub-divided and adapted as necessary to regional demands. Any one or several, suitable for the task, may be asked to prepare new material. What is suitable now could be utilized or re-edited.

An idea of the progress made by the Province of Saskatchewan in co-ordinating publicity may be gained from the "Foreword" of the publication entitled *Guide to Saskatchewan Agriculture*.

"For years a wealth of agricultural information based on research, experimentation and practice has been available from many sources in Saskatchewan, but not until 1928 was a definite attempt made to co-ordinate and consolidate this information into readily usable form for the benefit of farmers. In 1928 representatives of the University of Saskatchewan, the Saskatchewan Department of Agriculture and the Dominion Experimental Farm System in Saskatchewan met in conference and prepared and presented practical reports and recommendations on the major problems of crop production in this province. These reports were then made available for the guidance of farmers.

The benefits accruing from this conference were such as to prompt the decision that it be held annually, and it became known as the annual "Agronomy Conference", the reports submitted each year being published and distributed widely as a bulletin entitled "Guide to Crop Production in Saskatchewan."

In 1932 a comprehensive plan was drafted by the Federal Minister of Agriculture to co-ordinate on a national scale all government services, both federal and provincial, available for farmers. This plan involved a national committee and a co-operating advisory committee in each province. The Saskatchewan Advisory Committee on Agricultural Services, the personnel of which is given on page 3 of this publication, was named early in 1933, and, as this committee represents every phase of agriculture, it was agreed that the Agronomy Conference should be broadened out to deal with agriculture as a complete picture. This was done at the conference held on January 30 to February 2, 1933.

The Agronomy Conference, therefore, has now been absorbed into the larger agricultural conference sponsored by the Saskatchewan Advisory Committee. The present publication also goes out under the broader title, "Guide to Saskatchewan Agriculture", and it represents the unanimous findings of the technical workers in agriculture in this province. As such it forms an authoritative, practical but necessarily brief handbook on the production problems of Saskatchewan Agriculture, and should be regarded as an indispensable addition to every farmer's library."

#### CONCLUDING COMMENT

Further quotations could have been made from reports representing the C.S.T.A. Locals across Canada. It is felt, however, that the ground has been fairly well covered by the extracts presented. This report is respectfully submitted in the hope that it will arouse further interest in this important matter and lead to a more efficient co-ordination of extension services throughout the Dominion of Canada.

W. J. BLACK, *Chairman*

L. P. ROY

R. S. DUNCAN

A. M. SHAW

F. M. CLEMENT.

NOTE. This report was presented at the C.S.T.A. Convention, Regina, on July 24. An interesting discussion followed, a summary of which may be found on page 784 of this issue. Editor.

## REPORT OF THE C.S.T.A. COMMITTEE ON RESEARCH

### CHAIRMAN'S SUMMARY

After a thorough canvass of the entire situation this Committee undertook in 1932, as their major line of work, a survey of the active research and experimental work now under way in Canada, according to the preliminary plan put into operation the preceding year. While it was recognized that the method of securing this information through correspondence was not ideal, it was the only possible one under the circumstances. The fact that the members of the Horticultural Group were able to prepare a reasonably complete set of abstracts a year ago greatly facilitated the work of the Committee, and their work served as a model for other groups. Each member of the Committee was requested to secure similar abstracts from the individual members of his group, and with these as a basis to prepare a short summary of his particular field under the headings of (1) "accomplishments, (2) "trends" and (3) "needs".

It was not expected by the Committee that this rather ambitious project could be completed in a single year, but we are able to present to the Society at this time a record of progress that is quite substantial.

It should be emphasized, however, that the present is a progress report only. It was thought better to proceed with deliberation rather than to hurry forward reports in an incomplete form. Within another year it is hoped that there will be available summaries of practically all research and experimental projects that will give, for the first time, a complete picture of the research and experimental work in agriculture now under way or recently completed. When that is accomplished, steps will be taken to issue revisions of the list of projects as new work is undertaken and old work completed. After this initial effort the task of keeping the work up-to-date should be a comparatively simple matter, and it will be the duty of the new Committee to devise a satisfactory procedure to this end.

It is only fair to state that the entire project would have been impossible without the co-operation of various members, not originally on the Committee, who consented to act for groups of workers not officially organized under the C.S.T.A. The heaviest burden naturally fell upon officials of the Dominion Experimental Farms Branch, who, with the co-operation and approval of the Director, secured the abstracts for all projects within their jurisdiction and turned them over to the Chairman of the group concerned. Other Branches of the Department co-operated in the same whole-hearted manner. The invaluable co-operation of the Dominion Department of Agriculture in caring for the mimeographing of the various abstracts is gratefully acknowledged. The constant interest and assistance of our energetic General Secretary was an essential element in the success of the undertaking. The heads of the various agricultural faculties or colleges and the Chairman of the National Research Council also extended every possible support. The completion of the work of the Committee will represent a unique achievement, only made possible by the united efforts of the foregoing individuals and organizations.



It is expected that the various group surveys will be of service to the individual workers in keeping them informed of the work progressing in their particular fields. It will serve as a ready reference to busy executives, will facilitate their decision with respect to the disbursement of funds and assist them in deciding where necessary economies can best be made. It should enable those in charge of various research projects to explain and justify their needs for financial support. It is hoped that it will have some effect in securing better co-ordination of work and in avoiding unnecessary and costly duplication.

It is not expected that the work, even when completed, will be perfect. It is expected that it will reveal many weaknesses and inconsistencies and it will doubtless be subject to criticism. This is inevitable. No attempt has been made to make any sharp distinction between research and investigation and, in spite of editing, material will creep in that many will regard as weak or unsuitable for such a report. It may be argued that this is not an unmixed evil, since it will reveal a truer picture of the type of work being done and of the conception of research entertained by the members better than if the material were severely edited. It is quite conceivable that this revelation may result in a better method of selecting, planning and reporting of research and experimental problems.

At the present time abstracts covering the following subjects have been received: horticulture, apiculture, entomology, dairying, tobacco culture; horticulture, entomology and dairying have been mimeographed and are ready for distribution. Distribution will be restricted to those engaged in the work of each field and to the administrative officers concerned.

General summaries have been received from the following: agricultural engineering, animal husbandry (West), apiculture, dairying, entomology, horticulture, tobacco culture, soils, and economics. The work of the agronomy group is well under way.

W. H. Brittain—*Chairman*  
 G. D. Mathews—*Agronomy (Western)*  
 L. H. Newman— “ *(Eastern)*  
 F. H. Reed—*Animal Husbandry (Western)*  
 E. B. Fraser— “ “ *(Eastern)*  
 C. B. Gooderham—*Apiculture*  
 L. G. Heimpel—*Agricultural Engineering*  
 A. Gibson—*Entomology*  
 J. E. Lattimer—*Economics*  
 R. J. Hutchinson—*Fibre Crops*  
 M. B. Davis—*Horticulture*  
 J. G. Coulson—*Phytopathology*  
 G. N. Ruhnke—*Soils*  
 N. F. Nelson—*Tobacco*.

## LES DIRECTIVES DE LA C.S.T.A. DANS L'AGRICULTURE CANADIENNE<sup>1</sup>

H. L. TRUEMAN

*Société des Agronomes Canadiens, Ottawa*

De façon à comprendre la nature des services rendus à l'Agriculture Canadienne par la Société des Agronomes Canadiens, et pour les apprécier à leur pleine valeur en vue des conditions maintenant existantes, il est nécessaire de repasser brièvement le développement de la Société durant les dix premières années de son existence. Quatre traits de la croissance de la société peuvent être considérés comme caractéristiques de la période de 1920 à 1930.

(1) *Augmentation des Membres.*—Commencant avec un petit groupe d'enthousiastes se rencontrant à Ottawa en 1919, le nombre s'élevait au chiffre approximatif de 500 au moment de la convention d'organisation en juin 1920. Durant les dix années qui suivirent le nombre de membres s'éleva au delà de 1,200. Durant les derniers dix ans, de nombreux élèves finissants des collèges et jeunes gradués furent attirés vers la Société par l'importance de sa Revue, "*La Revue Agronomique Canadienne*", par le bureau d'emploi et par les bourses qui étaient accessibles aux membres. Ces 1,200 membres étaient groupés en 17 groupes régionaux dans les diverses provinces. Les conventions annuelles tenues à différents endroits d'année en année ont beaucoup contribué à développer l'amitié et le bon vouloir entre les diverses sections du service agricole.

(2) *Publication.*—Commencant avec une petite revue, plus ou moins populaire de sa nature, nous avons développé une revue scientifique de mérite établi. *La Revue Agronomique* fait honneur à la société et à l'Agriculture Technique au Canada.

(3) *Organisation des Groupes.*—Dans la C.S.T.A. se sont développés des groupes de spécialistes en divers sciences qui ont rapport à l'agriculture. Bien que bon nombre de ces spécialistes soient, individuellement, membres d'associations scientifiques des États-Unis, ces associations ne les distinguent pas comme groupes canadiens dans leurs champs respectifs. Dans plusieurs cas, le nombre de Canadiens engagés dans ces diverses sciences n'est pas assez considérable pour permettre la formation d'une association indépendante. L'aide de la C.S.T.A. a permis à ces groupes de se développer comme unités canadiennes affiliées intimement à la société mère.

(4) *Comités Permanents.*—Un des devoirs principaux de la C.S.T.A. a été de diriger et d'unifier la pensée professionnelle, et ici le travail des comités permanents a été important. Le comité d'éducation, le comité de la co-ordination des programmes agricoles, le comité des études postsecondaires et le comité des recherches ont tous contribué à diriger l'opinion des techniciens agricoles sur les problèmes communs à tous les divers départements et institutions d'un jeune et progressif pays comme le nôtre.

Nous remarquons, donc, quatre développements principaux dans les premières dix années de notre existence comme entité nationale:—(1) Une croissance de bonne volonté et de connaissance parmi les 1,200 membres;

<sup>1</sup>Adresse préparée par le Secrétaire Général et traduit par M. O. A. Lemieux, Ottawa.

(2) l'établissement d'une revue scientifique d'une autorité reconnue; (3) l'organisation de groupes spéciaux dans la société; (4) la directive de l'opinion nationale en ce qui concerne les problèmes professionnels, grâce au travail de nos comités permanents.

Ces développements se sont opérés pendant l'expansion des divers services agricoles. Les dépenses pour personnel et outillage augmentaient. La C.S.T.A. grandit avec le temps. Je ne voudrais pas dire que la croissance fut aussi facile que ce compte rendu pourrait laisser entendre; les membres de l'exécutif ont souvent fait face à des problèmes aussi épineux que ceux que nous confrontons en ce moment, bien que nous ayons eu des moments critiques à passer dans les deux dernières années.

Au commencement de la deuxième décade de la vie de la C.S.T.A. nous envisageons un état de chose différent. Nous opérons, pour ainsi dire, sur un marché qui est à la baisse, quant aux services agricoles. Nous devons couper nos dépenses de personnel et d'outillage. Notre société, comme toutes les autres organisations du genre, a dû faire un inventaire complet de son actif et passif et repasser son programme à la lumière des conditions telles qu'elles existent maintenant. Depuis 1930, nos officiers ont essayé de faire le programme de la Société pour le plus grand bien de la profession et de l'industrie. Nos activités durant cette période peuvent être examinées sous les mêmes quatre chefs déjà donnés comme caractéristiques de la première décade.

(1) *Membres.*—Comme la plupart des autres sociétés, nous avons perdu des membres. La perte, heureusement, n'a pas été grande; seulement à peu près 10 pour cent, ce qui nous laisse avec encore au delà de 1,100 membres. Quand on se rappelle que déjà la Société voulait limiter son nombre de membres à 1,000, nous ne faisons pas trop mal si nous nous tenons au-dessus de ce chiffre. Quatre nouvelles sections régionales ont été formées en 1930 afin de donner aux membres dans certaines régions le pouvoir de s'exprimer et de se développer. On conserve beaucoup d'intérêt dans les cercles régionaux et on s'efforce de garder les vieux membres et d'en joindre de nouveaux. La convention tenue dans l'Est, à Guelph en 1931, était la plus nombreuse qu'on ait jamais tenue, et celle de Régina lors de l'Exhibition Mondiale du Grain, était la plus large jamais tenue dans l'Ouest.

(2) *Publication.*—La Revue officielle de la Société, "*La Revue Agronomique*", conserve son volume et améliore la qualité de son matériel. Le genre d'imprimerie a été amélioré durant l'année dernière, avec une réduction dans le coût d'impression. Une limite de douze pages avec le privilège de payer une partie du coût des pages de surplus, a permis d'améliorer le genre d'articles publiés, et aussi plus de variété. L'introduction d'un plus grand nombre d'articles traitant d'Economie et de Sociologie, a augmenté l'intérêt et a contribué à renseigner nos membres pour leur permettre de discuter avec des gens des autres professions les tendances générales de l'agriculture. Un autre trait qui rend la revue plus intéressante est l'inclusion d'un plus grand nombre de résumés. Au moment, nous publions des abstraits des conférences données dans les diverses sections, ainsi rendant service à ce groupe et attirant l'attention de tous les membres sur son travail. Il est à espérer que cette initiative soit continuée et même augmentée. Elle sert à élargir l'intérêt du journal sans en diminuer la qualité. L'inclusion de résumés français a été d'un



avantage pour les membres de Québec et nos abonnés européens. L'an dernier lors de ma visite à Québec, j'ai promis de trouver plus d'articles français pour la Revue. Malheureusement, il y en eu moins que l'an dernier. Si nous en avions reçus plus, nous en aurions publiés plus; nous avons accepté tous ceux qui nous sont parvenus. Bon nombre de vos gens ont été plus occupés que d'habitude dans ces temps difficiles, et n'ont pas eu le temps de préparer des articles. J'espère que vous ne considérerez pas l'année dernière comme temps perdu. Nous avons publié des articles anglais plus courts et plus variés, et après tout, le but de la société n'est pas nécessairement de maintenir une balance mathématique entre le nombre de pages écrites en anglais et en français, mais le but est de fournir les renseignements aussi tôt possible. Il est fort possible qu'un plus grand nombre d'articles plus pratiques publiés en anglais avec un résumé français vous serait plus utile qu'un seul article français par mois. Cette idée est avancée, non pas pour remplacer les articles français quand nous pouvons les obtenir, mais pour rendre un plus grand service en tout temps.

(3) *Organisation de Groupes*.—Durant les deux dernières années, deux nouveaux groupes ont été organisés: le Groupe de la Science du Sol, et le Groupe du Génie Mécanique Agricole (Agricultural Engineering). Le travail accompli par la Section des sols peut être cité comme exemple de ce que signifie une telle organisation pour les gens intéressés. Après leur première assemblée, la première information donnée aux membres fut la liste des gens qui s'occupent de la science du sol au Canada. La deuxième fut une liste des projets maintenant à l'étude par ces techniciens. La publication de cette information avec les deux assemblées déjà tenues a donnée une idée générale du travail accompli, et a permis d'unir plusieurs projets dans un projet national, la préparation d'une carte des sols du Canada.

D'autres projets co-ordonnés découleront naturellement du contact de ces techniciens, comme la chose est arrivée dans d'autres sections.

(4) *Comités Permanents*.—Le Comité d'Education et d'Extension est engagé, dans le moment, à obtenir des opinions sur les méthodes d'extension. Comme guide, ce comité se sert d'un rapport qui a été présenté à la Conférence Nationale des Services Agricoles en août 1932. Plusieurs questions importantes ont été soulevées dans ce rapport, quant à la valeur relative de certaines méthodes, et il est à espérer que ce comité régional de la C.S.T.A. fera un effort pour répondre à ces questions en demandant aux intéressés d'exprimer leur opinion.

Le Comité des Recherches de la C.S.T.A. est occupé à grouper tous les rapports des projets de recherches agricoles maintenant à l'étude au Canada. L'étude est conduite en co-opération avec les sociétés affiliées et les sections de la C.S.T.A. Quand les rapports pour une section sont assemblés, un comité de techniciens de cette section fait un index par sujets et institutions et va étudier l'ensemble du matériel, montrant les tendances, les lacunes, et si possible suggérant des avenues pour le travail futur. Le rapport de chaque section sera mimeographié, et distribué parmi les gens intéressés. Cette entreprise demande un montant considérable de travail et est le travail le plus lourd jamais entrepris par le comité des recherches.

De bonne heure en 1932, les nouveaux membres de l'Exécutif, le Dr. G. I. Christie, comme Président, et Mr. L. H. Newman comme Vice-Président, discutèrent avec l'Honorable Robert Weir, Ministre Fédéral de l'Agriculture, l'opportunité d'une Conférence Nationale de l'Agriculture. Mr. Weir à la convention de Winnipeg en juin 1932, demanda conseil à la C.S.T.A. au sujet de l'établissement d'un comité national pour consolider le travail de plusieurs comités fédéraux et provinciaux déjà existants. Les Directeurs de la C.S.T.A. approuvèrent notre participation dans un tel projet et on donna à l'Exécutif le pouvoir de procéder. Subséquemment l'Exécutif aida les officiers du Ministère Fédéral de l'Agriculture à formuler le programme de la Conférence Nationale, et à la formation d'un comité permanent. La Conférence eut lieu à Toronto en août 1932, et un accord général eut lieu sur la méthode d'attaquer certains problèmes nationaux d'importance majeure, et la formation d'un comité consultatif fut autorisée. Depuis ce temps, plusieurs provinces ont eu des conférences provinciales auxquelles on a étudié le rapport général de la conférence nationale. Plusieurs comités conjoints sont à l'oeuvre dans diverses provinces, aplanissant les difficultés et formulant des programmes pour les divers services.

La C.S.T.A. a donné son appui à cette initiative comme un autre pas vers cette co-ordination des services qui est tant à désirer. La Société contribua d'une manière efficace à assurer le succès de la Conférence Nationale des Services Agricoles, et elle continuera de seconder ce mouvement autant que possible, selon les principes qui gouverne le fonctionnement de la Société.

Les années de 1920 à 1930 furent des années d'agrandissement de l'agriculture technique. Durant cette période, la C.S.T.A. grandit comme elle. Heureusement, en grandissant elle posa le fondement de son utilité pour la période de co-ordination à laquelle nous sommes maintenant arrivés. Grâce au bon vouloir et à la confiance que nous avons su commander durant la première décade de notre existence comme société, nous avons pu aider matériellement la co-ordination des services agricoles, par le travail des Comités Permanents et la formation d'un Conseil Consultatif Agricole National; nous avons pu établir notre Revue comme voie pour la publication d'articles techniques au Canada alors que toutes les autres voies leur étaient fermées; nous faisons voir en plus notre utilité en co-ordonnant le programme technique de l'Exhibition Mondiale du Grain, et en acceptant la charge de la publication du rapport de la Conférence.

Ces services à l'Agriculture Canadienne ont été rendus durant les trois premières années de notre deuxième décade d'existence, et cela en face d'une très grande dépression. Ce sera le devoir de l'Exécutif de la Société de continuer ce genre de service avec la conviction que la C.S.T.A. n'a jamais été en meilleure position pour donner des directives à l'Agriculture Technique Canadienne qu'elle ne l'est dans le moment.

Cette année la Société est fortunée d'avoir comme Président et Vice-Président deux de vos chefs les plus honorés. Il est bien qu'il en soit ainsi. J'admettrai franchement que le surcroit de travail causé par l'état des finances de la Société, la Conférence Nationale des Services Agricoles, et l'Exhibition et la Conférence Mondiale du Grain, m'a empêché de m'occuper autant que je l'aurais voulu de la section française de la Revue et d'étudier votre langue

et vos problèmes. Durant la dernière année, nous nous sommes efforcés de donner du service national à des problèmes nationaux. Un des traits les plus importants de notre Société est que nous transportons nos conventions annuelles de province en province, donnant à chacune une conception plus étendue du développement national et recevant de chacune une connaissance plus intime de ses problèmes locaux, ses espoirs et ses aspirations. Nous demandons, pour le moment d'avoir confiance dans nos entreprises pour le bien-être de l'agriculture et du service technique, jusqu'à ce que nous puissions vous revenir sous la direction de vos propres hommes, et dans notre convention annuelle nous puissions étudier plus profondément l'édifice qui s'élève d'année en année.

### RESUME DES ARTICLES PUBLIES EN ANGLAIS DANS CE NUMERO

**EFFET DE L'ENERGIE RAYONNANTE SUR LES PROCESSUS HEMATOPOIETIQUES CHEZ LE PORC.** R. D. SINCLAIR, UNIVERISITE DE L'ALBERTA, EDMONTON, ALBERTA.

Dans cette expérience l'énergie rayonnante n'a pas semblé influencer sur les cellules rouges et les formations hémoglobines. Tandis que le nombre des cellules rouges a diminué, le volume des cellules et le pourcentage hémoglobine ont augmenté, la tendance étant plutôt saisonnière que résultant de l'expérience. La valeur du sang atteignit son point le plus bas en février, suivi d'un rétablissement en mars et avril. A la fin de l'expérience un état plus favorable du sang a été noté chez les porcs auxquels on a donné une ration supplémentaire en matières minérales que chez ceux à qui on a fait suivre la diète régulière, une condition favorisant mieux leur croissance et leur maintien en général. La formule leucocytaire n'a rien révélé d'important. L'énergie rayonnante n'a pas paru influencer sur les processus hématopoiétiques. Le nombre des érythrocytes et le volume des cellules comprimées concorde étroitement dans l'examen du sang.

**ALIMENTATION DES POUSSINS ET DES POULES PONDEUSES AVEC DE LA MELASSE DE CANNE.** A. J. G. MAW, COLLEGE MACDONALD, P.Q.

L'addition de la mélasse aux pâtées soignées aux poussins en éleveuses a causé une consommation plus élevée de nourriture sans augmentation correspondante de poids. La ponte des oeufs a diminué chez les poules dont les rations contenaient de la mélasse. La présence de la mélasse dans la nourriture régulière n'a pas affecté la consommation alimentaire ni le poids.

**EFFET PHYSIOLOGIQUE DE LA BASSE TEMPERATURE SUR LE CARACTERE BIENNAL DU TREFLE BLANC.** (*Melilotus alba*). I. J. JOHNSON, Université du Minnesota, St. Paul, Minnesota.

Des graines et des plants de trèfle blanc Alpha 3 en germination furent, à deux étapes de leur croissance, soumises à des arrêts forcés de croissance dans le but d'amener la floraison pendant la première année de croissance dans les pépinières. Les graines en germination soumises à des arrêts forcés de croissance pendant 10 et 20 jours à 0°C, et pendant 10 et 20 jours à 0°C puis pendant 16 heures à 3°C, ne produisirent pas de plantes qui fleurirent dans les pépinières la première année. Des plants de trèfle blanc Alpha 3 soumises à des arrêts forcés de croissance quand la plante avait trois feuilles ont produit des plantes qui fleurirent dans les pépinières la première année. Des plantes venues de plants soumis à des arrêts forcés de croissance à 0°C pendant 20 et 30 jours étaient supérieures à d'autres venues de plants tenues pendant 10 jours à la même température. Il appert qu'une période d'arrêt de croissance de 20 jours soit presque le maximum exigé pour la floraison la première année. Des plantes venues de



plants soumis à des arrêts de croissance alors qu'ils avaient trois pouces ont réagi en général comme celles traitées à une étape antérieure. Malgré la floraison plus tardive de ces plantes on attribue cette réaction en premier lieu à la date à laquelle les plants furent rendus à leur vie végétative. Les plants plus avancés furent rendus à leur vie végétative un mois plus tard que les plants plus jeunes.

NOTE SUR L'HUILE DE PILCHARD POUR LES POUSSINS. V. S. Asmundson et W. John Allardyce, Université de la Colombie britannique, Vancouver, Colombie britannique.

L'huile de pilchard de la Colombie britannique, l'huile de sardine de la Californie et l'huile de foi de morue du commerce, nourries à raison de 1% ont prouvé d'égale valeur dans la prévention du rachitisme chez les poussins âgés jusqu'à cinq semaines. Des poussins alimentés avec la même ration mais sans huile devinrent tous rachitiques à l'extrême. Les poussins soignés à l'huile de pilchard contenant 40% de stéarine ont donné des résultats égaux à ceux obtenus avec la même huile clarifiée ou non clarifiée. Ceci indique probablement que un demi de 1% de cette huile constituait une ample protection contre le rachitisme.

NOTES SUR UNE MITE PARASITAIRE DE LA PUCE. W. E. Whitehead, Collège Macdonald, P.Q.

La mite, *Tyrophagus putrescentiae* (Schrank 1871) est transportée par la puce *Ceratophyllus saundersi* Jordan, décrite récemment comme une nouvelle espèce. Seules des mites imparfaites sont rencontrées chez les puces. Elles s'enfoncent sous les tergites superposées des puces et se fixent aussi au moyen de suçoirs ventraux. On connaît très peu de ces mites adultes; on les croit très voraces.

LE "SCALYLEG" CHEZ LES OISEAUX SAUVAGES. W. E. Whitehead, Collège Macdonald, P.Q.

Cette brève note signale l'infestation du merle bronzé (*Euphagus carolinus* Linn.). On présume que c'est la première étude publiée de cette infestation dans l'Amérique du Nord.

## FELICITATIONS

Joseph Ferland (Laval '17) Ste-Marie de Beauce, vient d'obtenir le titre de Licencié en sciences agricoles de l'Université Laval après avoir soutenu devant la Faculté des Arts de l'Université une thèse sur la production des semences sélectionnées. M. Ferland est le deuxième membre de notre Association à obtenir ce titre de l'Université Laval. Toutes nos félicitations à notre confrère.

## CONCERNING THE C.S.T.A.

### REPORT OF REGINA CONVENTION

The thirteenth annual convention of the C.S.T.A. opened in Darke Hall at Regina College on Monday, July 25th, Dr. G. I. Christie presiding. There was a good attendance considering the fact that many members were tied up with work in connection with the Grain Exhibition. Dean E. A. Howes of Edmonton maintained his unbroken record of attendance at every C.S.T.A. convention since the organization convention in 1920. Dr. L. S. Klinck, first President of the Society, was present as were also several charter members including Premier Tolmie of British Columbia. Hon. W. C. Buckle, Minister of Agriculture for Saskatchewan officially welcomed the Society to Regina and paid tribute to the contribution which the C.S.T.A. was making to the programme of the World's Grain Conference.

### REPORT AND DISCUSSION ON RESEARCH

The Report of the General Secretary was given as printed in the preceding pages. Mr. Trueman also read the report of the C.S.T.A. Committee on Research in the absence of the Chairman, Dr. W. H. Brittain. A brief discussion followed in which several expressed their approval of the work of this committee. Sir John Russell of Rothamsted commented on the value of the project reports assembled by this committee from the point of view of the Imperial Bureaux. Sir Daniel Hall, Director of the John Innes Horticultural Institute, London, England, was introduced as the guest speaker. In a very comprehensive address he discussed the pursuit of science in relation to agriculture. Such matters as intense specialization, co-operation in research, new lines of animal research, and the importance of the economic aspect of agricultural research and extension were treated in a manner which left a deep impression on the members present. Sir Daniel has consented to revise a transcript of his talk and it will appear in an early issue of *Scientific Agriculture*. The following comment by Dr. E. S. Archibald in moving a vote of thanks to the speaker expressed very well the general attitude of the meeting.

"I think the report of Dr. Brittain and his Committee, which opened this general discussion, is worthy of comment and commendation by everyone here. Very few realize the insurmountable task of attempting to collect and to epitomize the lines of agricultural research and investigation as they are being conducted by various organizations throughout Canada. I have been associated for the last twelve or fifteen years with the Committee which has had this task in hand. There is a lot of splendid work done in this report. We of the Experimental Farms have published a list of our experimental work previously not in any way to disassociate ourselves in the classifying of agricultural research in Canada from the universities, schools and other institutions, but simply as a useful index for the other institutions until such time as this Society could fully function as outlined by the Committee. I think the fact that we really have a live Committee that is doing this work so excellently is one which undoubtedly should receive an expression of confidence and appreciation from every member of the Society from one coast to the other.

This project which the Committee has in mind, namely of drawing together in a clear cut form the picture of our agricultural research activities in Canada, has been very ably reviewed by Sir Daniel Hall. There is probably no one in Great Britain, or in the British Empire, although he has mentioned our good friend the late Professor Wood, who has such a very broad picture of agricultural economics and agricultural research, and the inter-relationship of the two, as the speaker whom we have had this morning. The fact that Sir Daniel Hall has given so much of his time in recent years to the development of that splendid institution, the John Innes Institute, has not in any way divorced his activities from all other phases of agricultural research in

Great Britain and his tremendous usefulness to the British Ministry in an advisory capacity, and to the International Institute at Rome and to other research organizations throughout the world. It does seem to me that he has clearly pictured our responsibility as scientists developing our own specialty. Our responsibility in a young country where agriculture is young and where agricultural research is still younger is clearly that of keeping the problem of the individual farmer eternally in mind, no matter what our research activities may be. And, Sir Daniel and Sir John, I doubt very much if in any part of the British Empire you will find that clear-cut ambition on the part of research men in agriculture to a better degree than you will in Canada. We appreciate this reminder of our responsibility, and such a wonderful word-picture of our opportunities."

#### REPORT ON EXTENSION

The afternoon session of the Convention was given over entirely to the Report of the C.S.T.A. Committee on Education and Extension with the discussion led by the Hon. Robt. Weir, Minister of Agriculture for Canada. The report, which appears in full in this issue, was presented by Dr. W. J. Black of Montreal and Dean A. M. Shaw of Saskatoon. Dr. Black presented his summary of the present situation as it appears in Part I of the Report. Dean Shaw referred to Part II on extension methods and read some additional material from Saskatchewan which has since been incorporated in the report. Dean Shaw summarized his statement as follows:

"All extension services should be organized and administered from a suitable center. We are not going into that in detail; we believe that to be a sound fundamental principle. We know that it is extremely difficult in practice, because of the various forms of extension work that have grown up in Canada in the different Provinces and yet it is a problem that we have to study carefully and see just wherein are the difficulties, and wherein one system has definite basic advantages over another.

With regard to the individuals engaged on this work, we should consider the district representative as the agricultural advisor to his district; he should be respected by all, whether institution or organization, engaged in any form of extension work. We feel very definitely on that point; if these men are not capable, are not sufficiently well trained, have not sufficient personality to act as leaders for all organizations and groups who wish to work in that field then there is apt to be something wrong with the set-up some way or other. If they are not recognized in that way they actually lose prestige in their community, and criticism arises which is detrimental to the effectiveness of the work which they are endeavoring to do. Salaries should be adequate, and reasonably secure; this is an important feature in securing working efficiency. Extension work is usually most effective through personal contact, although that does not mean necessarily that the best extension man knows every farmer in any particular municipality or county. I don't believe that for one moment. The man who will effect a permanent improvement is the man who can impress the leaders of that community, the men who can actually get up and perhaps address meetings of farmers of that district and not know half of them, and yet impress them all very much with the ability that he demonstrates with regard to the district in which they live, the type of agriculture which they are following, and the problems that they have. He will make a far greater contribution in the end in that particular district than the man who is simply a common visitor and spends most of his time travelling in and out of farms as he comes to them. I do feel very definite in that regard. A great deal of time can be wasted, not only by the district representative but there is an all-important waste of the farmer's time as well in many cases. That does not mean, of course, that a man must not be friendly or have a personal contact, but it can be overdone.

The editorial policy of the C.S.T.A. journal, *Scientific Agriculture*, we think should be maintained on the high standard of excellence in the articles accepted for publication—no letting down in any respect with regard to the quality of that at all.



Critical reviews of scientific research can be published from time to time. Personal contacts between extension men and technical workers should be facilitated whenever possible.

This briefly is a summary of the views of the small group that were working in connection with this report as to the general feeling as near as we could sense it, particularly by correspondence and partly by personal contact with the men in the western provinces."

#### DISCUSSION ON EXTENSION

Hon. Robt. Weir expressed his appreciation of the report which he had previously studied. He referred to the National Conference on Agricultural Services held in Toronto in 1932 at which an effort was put forth to achieve in some measure the co-ordination of services stressed in previous C.S.T.A. reports. The second Conference just concluded in Regina was an additional step forward along this line.

In discussing extension methods Mr. Weir emphasized the desirability of extension workers being so organized that a more clear-cut picture of what they were trying to put across could be conveyed to the farmer, thus avoiding confusion in his mind. One feature of the whole extension system which might be improved is the publication of bulletins. A board was suggested to supervise publication in order to avoid overlapping, reduce expenditures, and increase efficiency. He also raised a point as to the real value of expenditures in connection with fairs and exhibitions, suggesting that the same expenditure might secure more permanent results if made through other channels.

A keen and interesting discussion followed the presentation of the report and Mr. Weir's discussion of it. Mr. Don Bark emphasized the need of a better information service on research results as outlined by Dean Shaw. Dr. Georges Bouchard stressed the humanitarian aspect, appealing for more consideration of the farm as a home rather than as a purely productive unit, and was supported by other speakers.

It seemed to be the consensus of opinion that the 1933 report was an additional step forward from the reports of previous years, summarizing as it did the need for co-ordination and giving in detail many recommendations regarding extension methods. Discussion soon centered around the point as to whether or not a single extension director, jointly employed in each province by the federal and provincial authorities, was the solution of the problem. It was felt by several that the system of working through joint committees which is gradually being evolved by the National Advisory Committee on Agricultural Services is as far as it is possible to go at present. The policy of having one director of extension in each province was held by Dr. W. V. Longley as worth aiming at, and Prof. J. MacGregor Smith suggested that an effort should be made to study existing extension systems to find out the strength and weakness of each as employed in the various provinces. Dr. H. Barton raised the point that the Quebec system of a board of extension directors made up of heads of the various provincial branches might be preferable to a one man-system.

Dr. Black referred to his experience while administering the Agricultural Instruction Act of 1916 and expressed the opinion that it was necessary to unify the agricultural activities of various departments and institutions. He felt that it was entirely within the range of possibility to secure men capable of giving leadership in unifying services in each province. Mr. J. H. Evans referred to the Agricultural Aid Act of 1912 and felt that the granting of federal funds to carry out work under joint supervision in each province was possibly the logical solution of the problem.

On the suggestion of Hon. G. Hoadley, Minister of Agriculture for Alberta, the report was received with the recommendation that it be made available for study by all governments in Canada with a view to their reporting upon the feasibility of the proposals involved.

The Chairman, Dr. G. I. Christie, brought the session to a close with the following remarks:

"We have had a very helpful discussion this afternoon, and I am hoping now that for some time to come we will not receive suggestions that extension has been ignored by the C.S.T.A. We have certainly done our best to give it a place on this programme, and to bring it out into the open. We have not reached any unanimity on the suggestion of a single director of extension for each province, but there is no question in my mind that there is agreement, one hundred per cent., on the unifying of our activities along extension lines. You and I are willing to give a little time to further study, to working out methods for bringing this about, and we are willing to put some determination into the job.

It is not necessary to accept the plan they have in use now in Denmark, or the plan that we may really be using now in some of our provinces; perhaps the study we can give will bring out a better plan, and if it does, that is what we want. The seed has been sown at the conference in Toronto last year and at the conferences which have been held here in Regina during the past week, and the fruit of that seed is on its way. This report is of great value. This afternoon has been well worth while and you and I in a very short time will see the fruits of it."

### REPORT OF THE RESOLUTIONS COMMITTEE

The Resolutions Committee recommends:

1. That suitably worded communications of sympathy be sent to Prof. F. W. Broderick, Winnipeg, who has recently lost a sister and to Mr. C. F. Bailey, Fredricton, who has been seriously ill.

2. That suitably worded acknowledgments of services, courtesies, and assistance be forwarded to the following:

Regina College,  
City of Regina,  
Government of Saskatchewan,  
Dominion Department of Agriculture,  
South Saskatchewan Local of the C.S.T.A.  
Local Council of Women of Regina,  
Women's Canadian Club of Regina,  
Regina Board of Trade.

3. That suitably worded acknowledgment of the indebtedness of the Society be sent to Sir Daniel Hall, and Sir John Russell, for their participation in the C.S.T.A. Convention.

4. That whereas the General Secretary, Howard L. Trueman, has failed to realize that a depression is on; has increased his activity in every field of the Society's endeavour and has thereby greatly extended the Society's sphere of influence both with the various departments of agriculture and the technical agriculturists of the country; has continuously stimulated and assisted all standing committees in the advancement of their work; and has above all recognized the opportunity of advancing the influence of the Society by assisting in the National Conference on Agricultural Services and the World's Grain Exhibition and Conference:—

Be it therefore resolved that we commend and thank our General Secretary for his effective service in the interests of the C.S.T.A. and agriculture in Canada during the past year, and that with this resolution be coupled a vote of appreciation to Dr. G. I. Christie and the other officers of the Society for their activities during their term of office.

H. G. CRAWFORD, *Chairman*,  
J. B. MUNRO,  
F. FOULDS,  
W. V. LONGLEY.

## C.S.T.A. ACTIVITIES AT WORLD'S GRAIN EXHIBITION AND CONFERENCE

### PROGRAMME ARRANGEMENTS

The services of the General Secretary were loaned to the Grain Show to act as Secretary of the Programme Committee. This work commenced last November and a considerable amount of time was spent in arranging the two hundred papers which appeared on the technical programmes. It was necessary to run as many as five or six technical sessions concurrently, and the planning of the programmes of these sessions with a minimum of conflict was not an easy task. Technical sessions were held at Regina College during the first week and at the Regina Armouries during the second week. There were very few disappointments, most of the sessions being well attended. Discussion was keen, and general satisfaction was expressed by Canadians and visitors regarding the programme arrangements.

### C.S.T.A. BANQUET

Two banquets were held during the first week of the Exhibition, the C.S.T.A. Banquet and the Official Banquet. The C.S.T.A. Banquet on Wednesday, July 26, at the Hotel Saskatchewan, was attended by members of the society, speakers, and some of the official delegates. Dr. G. I. Christie acted as Chairman and gave his presidential address. The guest speaker was Sir John Russell, Director of the Rothamsted Experiment Station, Harpenden, England. He gave an excellent address on the function of the technical agriculturists. Later, on his way back to England, Sir John spoke to the Ottawa branch of the C.S.T.A. on the present agricultural situation. Material from both of these addresses will be combined in a paper to be published in an early issue of *Scientific Agriculture*.

Appreciation to Sir John Russell, to the World's Grain Show, the South Saskatchewan branch of the C.S.T.A., and the Saskatchewan Government was ably expressed by Mr. J. H. Evans and responded to by Mr. J. Cameron, President of the South Saskatchewan Branch. Announcement of the award of the C.S.T.A. Fellowship for 1933 to Dr. E. S. Archibald was made by the General Secretary, and the retiring President, Dr. G. I. Christie, introduced the Hon. Dr. A. Godbout, Minister of Agriculture for Quebec, as the incoming President.

### C.S.T.A. EXHIBIT

When it was found that the C.S.T.A. would take an active part in handling the programme of the World's Grain Show it was decided to prepare an exhibit showing the activities of the Society. Space was allotted next to the Dominion Government exhibits and an attractive background was prepared by Mr. L. B. Jamieson, brother-in-law of Dr. J. F. Booth. Mr. Jamieson possesses excellent ability as a commercial artist and the scenes which he prepared were among the best in the whole show. A large map of Canada done in the early style and decorated to show the types of farming in the different sections and the location of all C.S.T.A. Branches formed the central part of the exhibit. This map was flanked by two panels in an allegorical style representing Science and Practice in Agriculture. Posters called attention to the fact that the Society publishes *Scientific Agriculture*, and will publish the Proceedings of the Grain Conference. A counter across the front displayed samples of reprints, early issues of the magazine, colored printing, reports of the C.S.T.A. standing committees and illustrations of the Society headquarters. Through the courtesy of The Robert Simpson Company, Ltd., Regina, two chesterfield sets were loaned and a spacious rest room was provided for members and their friends. The co-operation of the members of the South Saskatchewan Branch of the Society in setting up the exhibit and taking it down and arranging a staff to be in attendance was greatly appreciated by the Dominion organization. The material for the exhibit was furnished





C.S.T.A. EXHIBIT AT WORLD'S GRAIN EXHIBITION AND CONFERENCE

The Society had a sixty-foot space which was used for a rest room and information bureau. Furniture was loaned through the courtesy of The Robert Simpson Company. Samples of printing done by the Society were on display in the show case and on the end walls. A large map in the center showed the location of each C.S.T.A. Local, and bore the caption "Canadian Society of Technical Agriculturists—Linking Science and Practice in Agriculture from Coast to Coast -21 Branches in Canada 1,100 Members. One pictorial panel represented Science and the other Practice. The map and panels were the work of L. B. Jamieson.

by the Dominion organization and the local expenses were borne by the South Saskatchewan Branch. By thus dividing the responsibility the expense to both organizations was comparatively light. The services of Mr. Jamieson, the artist, were given at a very modest rate in view of his interest in the Society, and the pictures were all saved and will be used for decoration in the Society headquarters at Ottawa.

### 1934 CONVENTION IN PROVINCE OF QUEBEC

Hon Dr. A. Godbout, Minister of Agriculture for Quebec and President of the Society for 1933-34 extended a cordial invitation on behalf of the C.S.T.A. Branches in the province to hold the 1934 Annual Convention in the Province of Quebec. No definite location was specified and the matter of exactly where the Convention will be held and what tours may be arranged will be taken up at the annual meeting of the Directors at Toronto in November. Members of the C.S.T.A. who recall the last convention held in the Province of Quebec will be delighted at the prospect of a return to that most beautiful and hospitable section of the Dominion.



The Hon. Dr. Godbout and Mme. Godbout visited throughout the West and were greatly impressed with the Grain Show and with the country. Westerners, in turn, were pleased to meet the new President. The Quebec exhibit at the Grain Show was outstanding. The view of the Quebec farms along the St. Lawrence River with the City of Quebec in the background was the most outstanding panorama on exhibit. The staff deserved great credit for the capable manner in which the exhibit was displayed and for their courteous attention to enquiries regarding Quebec natural products and handicrafts.

### DR. E. S. ARCHIBALD HONOURED

The honour of receiving the C.S.T.A. Fellowship for 1933 went to Dr. E. S. Archibald, Director of the Dominion Experimental Farm System. Dr. Archibald graduated from Acadia in Arts in 1905, and from Toronto in Agriculture in 1908. He was given an honorary LL.D. by Manitoba in 1928 and an honorary D. Sc. by Acadia in 1930. He was Professor of Agriculture at the Nova Scotia Agricultural College from 1909 to 1912, Dominion Animal Husbandman from 1912 to 1919 and Director since 1919. During 1928-29 he was President of the C.S.T.A. and did much to build up the membership of the Society and the quality and influence of its journal, *Scientific Agriculture*.



As the C.S.T.A. is not purely a scientific organization but represents all types of agricultural research and organization, its Fellows are chosen from among those Canadians who have distinguished themselves in various fields of agricultural service. In the field of administration, no member of the Society has had a more brilliant career than Dr. Archibald. His work as Director of the Experimental Farm System is known throughout the world. He has acted as advisor to the Canadian government at several important conferences. During the Imperial Conference of 1932 he was largely responsible for the organization of the technical advisory staff for Canada. As Chairman of the Programme Committee of the World's Grain Exhibition and Conference his wide knowledge of agriculture and his personal acquaintanceship with leading workers throughout the world were of major importance in the successful organization of that event.

The C.S.T.A. is proud to honour Dr. Archibald for his outstanding service to Canadian Agriculture.

## William Terril Macoun

1869 - 1933



Of the twelve men who have held the office of president since the organization of the C.S.T.A. in 1920, only two are no longer with us—G. C. Creelman and now, W. T. Macoun. His passing while apparently in full vigour came as a shock to members of the Society and his many friends throughout the Dominion. Feeling that he was suffering from merely a slight indisposition it was only at the urgent request of a few intimate friends that he would abandon his customary summer tour and return to his home for rest. He never realized how heavily the strain had told upon his years, and this life closed for him on a Sabbath morning, peacefully and quietly in sleep, without regret and without sorrow.

We would have held him longer with us for we loved him. He belonged to a type now rapidly disappearing—men who are naturalists before they are scientists. One felt that he was akin in spirit to Thoreau and Burroughs and Bailey. His early years were spent in an atmosphere which developed his love for the natural sciences. What boyish enthusiasms must have been stirred when as a lad of fourteen he went with his father through the passes of the Canadian Rockies botanizing and seeking a route for a transcontinental railway. Little did he realize that some day he would play a leading part in creating fruit and flower for regions which as yet knew only the natural varieties.

It fell to his lot to assist in the building of a system of experimental farms which did much to set our standards for commercial and ornamental horticulture. He created for Canada increased material wealth, and did what many a captain of industry cannot do—he left the Dominion a more beautiful place to live in. He came to be honoured as a practical horticulturist, as an administrator, and as a man of science; and until the end, he whose services were sought in the development of our most beautiful public parks was as ready to assist in the planning of the humblest home garden. He lived close to God and nature, and he served his fellow man.

The *Ottawa Journal*, in speaking editorially of his passing, said, "Dr. William T. Macoun was one of those public servants whose contributions to knowledge and progress rarely receive adequate recognition, and whose loss is, in a sense, far greater than that which takes place in the passing of leaders in politics and industry. One of the ablest of a small group of men who cradled the Dominion Experimental Farm, he was perhaps little known to the general public, yet as a horticulturist and scientist of agriculture, he was one of the leaders of this continent, famous in his profession throughout the world. Not the least notable of a distinguished family, and one to which Canada owes a great deal, Dr. Macoun's work in improving Canadian apples meant, in itself, a tremendous gain for the horticulturists of this country. In addition, however, his knowledge ranged over the whole field of agriculture, and he was a great field naturalist, one who knew and loved flowers as few men of his time.

Such men are of the salt of a nation. When, as in the case of Dr. Macoun, they add to their knowledge and their devotion to the common weal the gift of a lovable nature and of a kindly, genial, radiant personality, their loss is all but irreparable."

Some men ride to their last resting place past the buildings they have constructed, or through the throngs they have led or the ranks of the armies they have commanded. He left his quiet home and the gardens which he had planted and tended to pass beneath the arching elms of the national arboretum, down past the lake at the foot of the hill, and on through the miles of civic driveway which he had helped to plan and develop. He rests in Beechwood Cemetery in the shade of the natural forest. He has gone back to the nature he loved; his spirit lives on in the hearts of men who loved him.

H.L.T.



## Frank Eric Millen

1882 - 1933

The untimely death on July 14th of Frank Eric Millen, Professor of Agriculture and Provincial Apiarist, at the Ontario Agricultural College, was a great loss to Canadian agriculture. Professor Millen was recognized as one of the outstanding apiarists in North America and was a widely known authority on the subjects of beekeeping and honey production. During his tenure of office much was done to raise the standard of apiculture throughout the province of Ontario. The apiculture building at the O. A. C., which stands as the largest and best equipped building devoted entirely to the science of beekeeping on this continent, represents the ideas and plans of Professor Millen. It will remain a lasting memorial to his foresight and initiative. The efficient system for the registration of beekeepers and the inspection of apiaries which he has built up is evidence of his organizing ability.

Professor Millen was born in Kent, England. In 1913 he graduated from the O.A.C. and was then appointed State Apiarist and Instructor in Apiculture at Michigan State College. In 1916 he was appointed Associate Professor of Apiculture at Iowa State College, and in 1919 he returned to his Alma Mater as Professor in Apiculture and Provincial Apiarist.

In paying tribute to him Dr. G. I. Christie, President of the O.A.C., said:

"Professor Millen was happiest when he was working with others. He won the hearts of the students and placed before them the highest ideals, stressing work and business ethics. He was not only a competent teacher but a man interested in fundamental research. He co-operated in a generous manner with apiarists all over the province, and beekeeping has advanced many points through his efforts. Professor Millen fought a good fight; he lived a rich, full life; he has left a deep impress on the lives of our people and he will not be forgotten."

To many of our readers Professor Millen's passing will be a deep personal loss. His genial good nature and sincerity won for him a constantly increasing circle of friends.

E.J.D.

## S. J. Sigfusson

1889 - 1933

We regret to record the death of S. J. Sigfusson, Assistant Superintendent, Dominion Experimental Farm, Brandon, Man. Mr. Sigfusson was drowned while swimming on June 25th. He was of Icelandic parentage and was a returned soldier. He graduated from Manitoba Agricultural College in 1914 and received his degree of M.Sc. from North Dakota in 1928. He was Assistant Superintendent at the Dominion Experimental Station at Scott, Sask., for one year and became Assistant Superintendent at Brandon in 1920.

Mr. Sigfusson had become quite widely known in recent years as an enthusiastic breeder of cereal crops, his most notable efforts being centred on the production of rust resistant varieties of spring wheat. In this field he succeeded in producing a number of varieties which, in tests thus far conducted, have proven very promising. He also leaves behind him a number of promising oat and barley varieties some of which may prove distinct contributions.

It is exceedingly regrettable that Mr. Sigfusson should have been taken just as the real merits of his work were beginning to be appreciated.

L.H.N.

## NATIONAL ADVISORY COMMITTEE ON AGRICULTURAL SERVICES

In August 1932 a conference of Ministers of Agriculture and technical officers was held in Toronto. At this time it was agreed that a committee of technical men should be set up for the purpose of bringing about a better co-ordination of agricultural services throughout the Dominion. It was further recommended that the Ministers of Agriculture should meet annually under the leadership of the Federal Minister and that the Provincial Ministers should sponsor provincial conferences on agricultural services at which joint problem committees could arrange for co-operation between services involved in the solution of particular problems.

These conferences were held in several of the provinces during the past year, and the second national conference was held at Regina from July 20 to 22, just previous to the opening of the World's Grain Exhibition and Conference. The meeting was opened by the Honourable Robert Weir, Federal Minister of Agriculture, and Dr. H. Barton, Federal Deputy Minister, was appointed chairman.

The following committees were appointed to review committee reports made at the 1932 conference, to discuss progress arising out of these reports, and to recommend action during the next few months:—

- |                               |  |
|-------------------------------|--|
| 1. Horse Improvement.         | 10. Pasture and Forage Crops.                      |
| 2. Bacon Production.          | 11. Cereals and Weed Eradication.                  |
| 3. Sheep Production.          | 12. Horticulture.                                  |
| 4. Beef Production.           | 13. Economics, Marketing and Agricultural Outlook. |
| 5. Dairy Herd Improvement.    | 14. Extension, Publicity and Publications.         |
| 6. Milk Products.             | 15. Entomological Problems.                        |
| 7. Poultry Flock Improvement. | 16. Agricultural Meteorology.                      |
| 8. Range Development.         | 17. Administration of Agricultural Services.       |
| 9. Health of Animals.         |  |

The following suggestions were made on the agenda distributed previous to the meeting:

"These Committees are to briefly review reports of Committees of the Toronto Conference and progress in the development of Problems Committees in the Provinces; any new and urgent problems are to be reported with recommendations to the National Committee on the succeeding day. Each Committee where applicable is requested to give particular attention to the following vital problems suggested by those in attendance:

1. The maintenance of agricultural inspectional services on a self-sustaining basis.
2. The urgent need for continuity in essential research and extension projects under present financial conditions.
3. The adoption of a Dominion-wide policy of co-operation between Federal and Provincial Governments or other agencies in the bonusing of purchase and maintenance of pure bred sires in horses, cattle, sheep, swine and poultry.
4. The building and maintaining of a co-operative Provincial and Federal Statistical Service as to available market supplies of bacon hogs, and beef cattle.
5. Grading of butter for domestic consumption.
6. Development of a joint Federal and Provincial policy of pullorum testing and control.
7. Establishment of part-time veterinary practitioners in Federal and Provincial services.
8. Testing for contagious abortion and disposal of reactors.
9. Occurrence and control of Hemorrhagic Septicemia in relation to movement of Western feeder cattle.
10. Telegraphic crop reports for Dominion Bureau of Statistics.

11. Co-operative publication of extension bulletins and circulars; publication of research papers.
12. Discrepancies in agricultural recommendations in chain radio broadcasts.
13. Reception of surveys and recommendations on cattle range improvement and sheep range improvement.
14. Maintenance of more adequate meteorological services.
15. Integration of the work of various Federal and Provincial services on agricultural outlook and planned production.
16. Soil survey programmes and other soil studies."

A day was spent in committee meetings and a day and a half in receiving and discussing the reports. As might be expected, there was not always agreement, but there was continually a frank interchange of opinion between representatives of all services and the Ministers present. As the Hon. Geo. Hoadley (Alberta) stated at the close of the conference: "... one of the outstanding and tremendously significant accomplishments of this body since it was created is the independent attitude that has been given to the solution of problems placed before you. I had many people speak to me in my own Province and in others after the first meeting where this system of organization was brought into being: they said you won't get anything but "Yes'es" and "No'es" from a body of civil servants; they won't feel that they will have sufficient latitude in considering questions to make suggestions which are in any degree contrary to the desires of Ministers, and which may run counter to government policies at present in effect. I congratulate you on this occasion for the demonstration that thoughts such as these have no effect in your deliberations, or on your conclusions."

In bringing the session to a close the Hon. Robert Weir summed up the value of such meetings as follows:

"The chief benefit of this conference and the inspiration from the commencement of it to its end has been this: governments may pass regulations, but what we need is not so many regulations as ideas. There is no waste so great, so wrong, as the wastage of ideas. If any man has an idea which he cannot put into effect for the benefit of agriculture, that is a very great wastage, because it is ideas which are living things. This Conference is, I believe, the best clearing house that we can have for such ideas. They are brought before you and tested, and if they stand the test they are submitted to the various Departments and Colleges; it is then up to us to bring them into operation as speedily as possible."

The Committee on the Administration of Agricultural Services brought in the following resolution which was adopted:

"That the Executive Committee of the National Advisory Committee on Agricultural Services be asked to nominate for the approval of the National Committee such special standing committees as they deem necessary to study conference matters in their several fields and to aid the Executive in the preparation of Conference Agendas, and that each such special committee consist of three members who shall be empowered to add to their numbers."

It is felt that the appointment of these standing problem committees will do much to speed up co-operative effort and to clarify problems which must be faced by the National Committee.

In choosing an Executive for the National Committee an effort was made to select a group of men who can meet easily and quickly and who are representative of the Federal services, Provincial services, and services outside of government control. The following were selected:

DR. H. BARTON,	DR. W. J. BLACK,	MR. J. A. GRENIER,
DR. G. I. CHRISTIE,	MR. J. B. FAIRBAIRN.	DR. ROBT. NEWTON,
REV. FATHER LEOPOLD,	DR. E. S. ARCHIBALD,	MR. H. L. TRUEMAN,



## RE-ORGANIZATION OF DOMINION LIVE STOCK BRANCH

The changes which have been made in the Live Stock Branch, due to re-organization as recommended by the Civil Service Commission, and effective on September 1st, 1933 are briefly summed up in the following official statement.

"The following Divisions: Cattle, Horse, Sheep and Swine, and Stockyards Service disappear as such, and are replaced by two Divisions or Services, Live Stock Market Service and Live Stock Field Services. The Poultry Division as it now exists carries on as such with minor changes. Hereafter, instead of being known as a Division, the title of Poultry Services will be adopted.

The Live Stock Field Services, as implied, will have to do with all manner of field service as properly coming within the scope of the Federal Department, and as concerning Federal Live Stock Branch policies in the different provinces. Field service will be carried out by Live Stock Fieldmen, and the work of these men will have to do with all classes of live stock. Hereafter, therefore, there will be no specialized positions such as Cattle, Sheep and Swine Promoters. Under the Live Stock Field Services will be included Record of Performance for Dairy Cattle, and, for the balance of 1933 only, Cow Testing. The supervision of beef grading will also be a part of the Live Stock Field Services.

The Live Stock Market Service will have to do with all phases of market service, including administration of the regulations governing stock-yards under the Live Stock and Live Stock Products Act, the administration of the Hog Grading Regulations, Markets Intelligence, etc. In this Service will be included also much of the work of the former Horse Division, mainly centering around stallion inspection and assistance to horse breeders generally.

The Poultry Division, as stated, will be subject to but slight change in structure and duties. As indicated, the name thereof will be changed to Poultry Services to conform with that of the other two Divisions. Within the Poultry Services will be included Field and Market Sections.

The administration of the Branch continues, without change, under the Live Stock Commissioner, with an Assistant Commissioner, the latter named from the present personnel. As in the past, the administration of the Fairs and Exhibitions Policy of the Federal Department of Agriculture will be undertaken by the Commissioner's office.

The staff of the Branch, due to re-organization, the consequent abolition of a number of positions, the consolidation and simplification of the structure generally, and as a result of the application of regulations governing age of retirement, has been reduced to the extent of some fifty employees throughout the Dominion."

Changes in personnel will be announced in the September Issue of *Scientific Agriculture*.

## C.S.T.A. CONVENTION PHOTOGRAPH

A good photograph of the convention group taken in front of Darke Hall, Regina, is available. Members who care to secure copies can get them at one dollar each post paid. The photographer circulated an order sheet at the C.S.T.A. banquet but unfortunately he lost it afterwards. Any who signed this sheet and may be waiting for a copy should notify the General Secretary. Photographs in post card size of many of the exhibits are also available at very reasonable rates.

An enlargement of the photograph of the C.S.T.A. exhibit as shown on page 788 is also available. This photograph is 7 x 19 inches and shows the detail of the background quite plainly. As the C.S.T.A. does not make a custom of taking part in large fairs and exhibitions and probably will not be represented again in this manner for some time, this photograph would make a rather interesting addition to any collection of Society mementos. The large print is available at \$1, and 5 x 7 prints of the two panels showing Science and Practice are available at 50c. each. Orders may be sent direct to the General Secretary.

## C.S.T.A. INTEREST IN EXTENSION PROBLEMS

A certain Agricultural Representative in Ontario met the General Secretary a few days ago and said "Well, I haven't seen you for three years. I suppose you have forgotten all about extension work and the farmers' problems by this time." The General Secretary desires to make it plain to all and sundry that he has not forgotten the farmers' problems nor the methods of approaching farmers in the solution of these problems, nor has the C.S.T.A. forgotten the ultimate objective of all agricultural services. It should be kept in mind that the publishing of scientific material rather than material which might be of immediate use by extension men is not necessarily an indication that the viewpoint of the extension man is being overlooked. The main concern of the Society in connection with extension work is that there should be some common understanding across Canada of the principles underlying extension methods and that all agricultural services should be administered with the problems of the extension men in view. To this end the Society has from time to time reported on certain general principles of administration. Several of these principles are being put into effect slowly but surely.

During the past year the Society has endeavoured through its Committee on Extension and Education to place before its members a report embodying both detail and principle in connection with extension work. The detailed recommendations made by many of the Branches of the Society represent the result of years of experience under different extension methods in different provinces. Every extension and administration man in Canada should read and study this report. Research workers will also find much of value in it. The discussion which followed the reading of this report at Regina is summarized in this issue of *Scientific Agriculture*. The suggestion that the Committee study during the next year the different systems of extension work in the different provinces is being considered, and it is possible that the Committee may undertake to evaluate the different systems and bring in a report at the next convention on the standardization of the various systems throughout Canada. In the meantime, it is hoped that any who study the present report will feel perfectly free to make suggestions to members of the Committee, or direct to the General Secretary who does not desire to forget his early contacts with extension services. The report may be found on page 760 of this issue.

## AUGUST ISSUE LATE

The pressure of work in connection with the Grain Show, the National Advisory Committee, and the C.S.T.A. convention made it impossible to get the August issue of *Scientific Agriculture* out on time. Much of the material had to be written by the Editor on his return from Regina, and a few days of rest had to be taken.

This issue concludes Volume 13. We have never been superstitious, but we hope the difficulties of publishing during the past year are due primarily to the alleged unlucky number which this volume bears and not to more fundamental causes. The combination of circumstances which included moving the office, facing financial difficulties in publication, and taking on a considerable amount of extra work in connection with the Grain Show and two national agricultural conferences has kept things on the move, so to speak. In spite of the pressure of technical material for publication and the limitations of space, we have tried to present a fair proportion of general articles and news. Some excellent material along this line is available for the next volume. This will include articles by Sir Daniel Hall and Sir John Russell and notes on the reorganization of various agricultural services throughout Canada.

The September magazine will appear more promptly than the present issue. Financing will continue to be one of the major problems. Members can assist in the matter by paying their dues promptly when billed in September and by securing new members for the Society.



## NOTES AND NEWS

W. A. Maw (McGill '20), Professor of Poultry Husbandry at Macdonald College, Quebec, has been elected Secretary-Treasurer of the Poultry Science Association at its 25th Annual Meeting held at East Lansing, Michigan.

Andrew Cairns (Alberta '23), formerly Statistician of the Central Selling Agency of the Canadian Wheat Pools, took an active part in the recent conference on wheat problems at the World Economic Conference in London. During the past two years Mr. Cairns has been engaged by the Empire Marketing Board in the study of the wheat situation.

Dr. O. M. Malte (Stockholm, Sweden), Botanist with the Department of Mines, died on his way to Ottawa for medical attention. He was travelling as a member of a Canadian Arctic Expedition. Dr. Malte was well known throughout Canada when he served in the Dominion Department of Agriculture. He has no relatives in Canada and is survived by his mother and a brother in Stockholm.

Mr. Harvey Mitchell, Deputy Minister of Agriculture for the Province of New Brunswick during the past thirteen years, resigned on August 1st. Mr. Mitchell has a record of nearly forty years of service to agriculture in the maritime provinces. This includes his work in the Federal Dairy Division in charge of Cow Testing in Prince Edward Island and as Dairy Superintendent for the Province of New Brunswick. He had experience also in practical farming and commercial dairying. It is hoped that Mr. Mitchell's health will improve on his retirement from active service and that he will enjoy many years of leisure after his long career.

H. W. Goble (Toronto '31) has returned from Iowa State College at Ames to his home at Woodstock, Ont.

V. S. Asmundson (Saskatchewan '18) has been appointed Assistant Professor and Assistant Poultry Husbandman at the University of California. He is located at the branch of the College of Agriculture, Davis, Calif.

L. H. Hanlan (Toronto '22) has changed his address from Hearst to Kapuskasing, Ontario.

J. C. Wilcox (McGill '19) has changed his address from 3825 West 26th Ave., Vancouver, to Drought Spot Investigation, East Kelowna, B.C.

Erdman Braun (Manitoba '28) is now located at the Dominion Experimental Station, Morden, Man.

R. Painchaud (Laval '23) has been transferred from Lambton to St. Georges Beauce County, where he is poultry specialist for the Quebec Department of Agriculture.

Gustave Boucher (Laval '33) has changed his address to Saint Philippe de Néré, Kamouraska County, P.Q.



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## ERRATA

Page 133. Change last paragraph to read as follows:

"In the Degraded soil associate which had grey round topped columnar structural aggregates the divalent cations had decreased to approximately 80% of the total absorbed bases and hydrogen, but the calcium had decreased to less than 40% while the magnesium has increased to over 40% and the hydrogen to 16%."

Page 289. In the third line from the bottom read, "East Indies" instead of "West Indies."

Page 291. In the second line from the top read, "in Canada" instead of "on this continent."